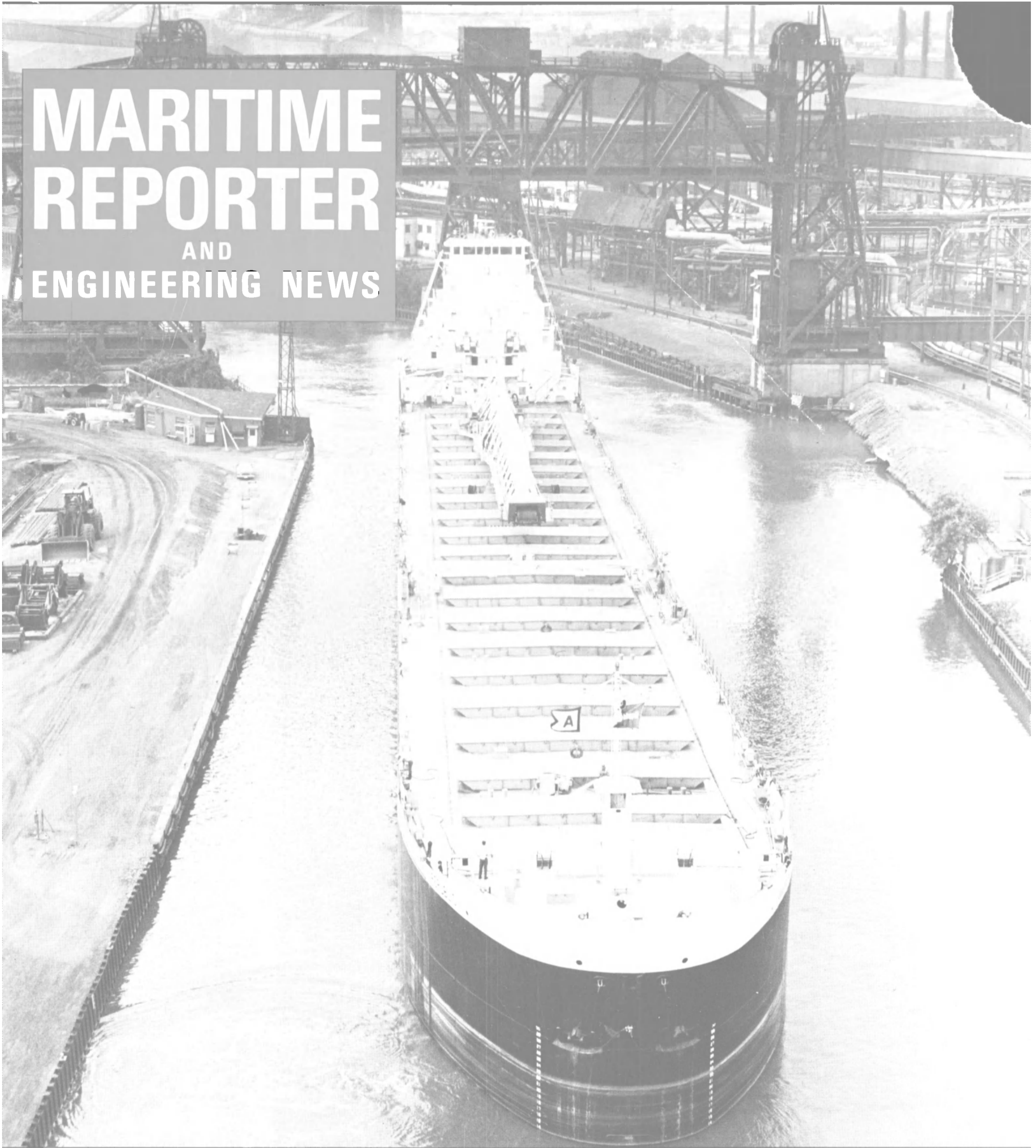


MARITIME REPORTER AND ENGINEERING NEWS



M/V American Republic

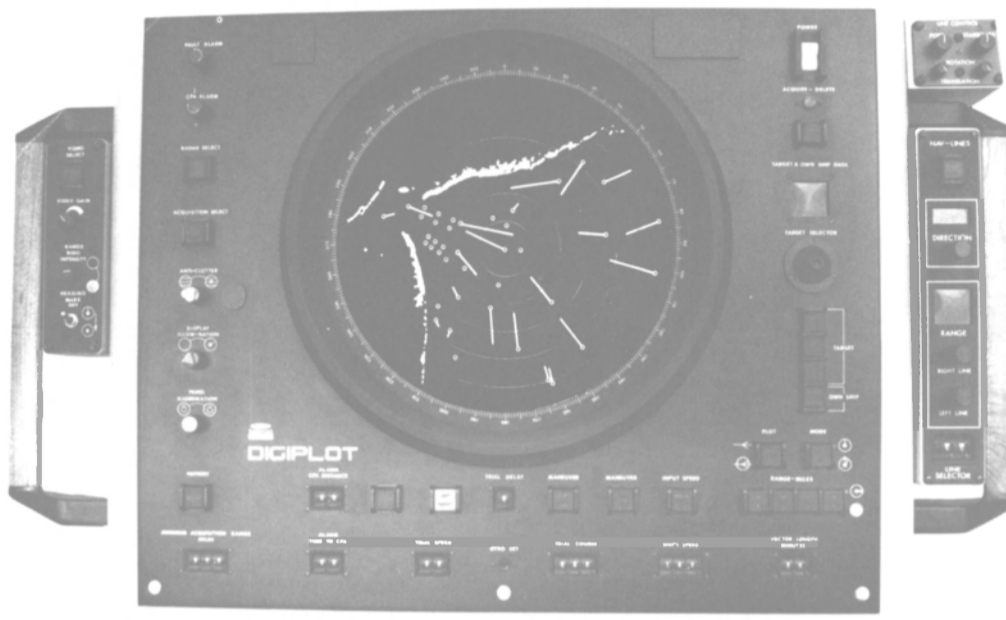
**Bay Shipbuilding Delivers
M/V American Republic
—Lakes 'Most Maneuverable' Ship**

(SEE PAGE 18)

AUGUST 15, 1981

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Walz & Krenzer Conveyor Belt Doors Solve Problem On New Keystone Collier

The collier now building at General Dynamics, Quincy, Shipyard for Keystone Shipping and New England Electric is a self-unloader and the first coal burning and carrying vessel to be built in the United States in 25 years.

Two 4-foot-wide continuous conveyor belts run the full length of the ship for unloading. To maintain watertight integrity of the four bulkheads through which the belts pass, challenging sealing problems arose.

The Walz & Krenzer patented conveyor belt door was selected because of its unique sealing characteristic. The door employs a floating rotating butterfly section between the load and return belts which was specifically designed to accommodate belt drift and provide adequate vertical clearances during unloading operations.

When the conveyor belt door is in the open position, generous

vertical and side clearance are maintained, eliminating belt wear and damage in this area. No sealing gaskets are exposed to wear or damage during unloading operations.

All controls and operating gear are explosion proof.

For complete information and literature,

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AmShip Toledo Yard Awarded Winter Repair Work On 3 Vessels

The American Ship Building Company has been awarded winter repair work on three vessels managed by U.S.S. Great Lakes Fleet Management Service, Inc.

The vessels will be repaired by American Ship's AmShip Division at its Toledo shipyard. In early July the unions at the AmShip shipyard in Toledo agreed to a new contract which contains language allowing for job flexibility similar to a contract at AmShip Division's main American competitor.



Halter Delivers Two Crewboats For Offshore Service In California

Two identical 101-foot aluminum crewboats, the Shawn (shown above) and Craig built by Halter Marine, Inc. for J.P.M. Ltd. of Ventura, Calif., are now serving Union 76 rigs in the Pacific off southern California.

The boats were purchased recently from Halter's in stock building program and were delivered within 42 days of contract signing. They made a faultless delivery voyage from New Orleans through the Panama Canal, up to their California base. The trip was facilitated by the vessels' large 2,478-gallon fuel oil capacity.

A prominent feature of each vessel is the large 55 by 17-foot

aft deck, which can carry up to 30 tons of cargo. This capacity coupled with the boats' ability to carry 55 passengers gives the vessels an unusually high payload for vessels this size.

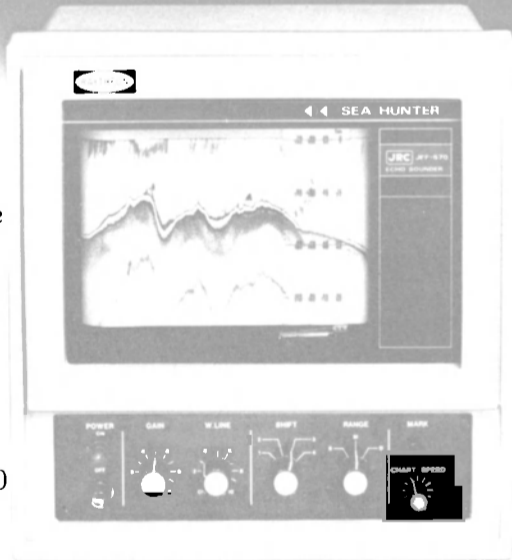
The Shawn and Craig are each 101 feet 6 inches long, with a 21-foot 3-inch beam, and 9-foot 6-inch depth. Normal operating draft is 5 feet 6 inches. Each is powered by three Detroit Diesel 12v71TI engines developing 510 shp each at 2,100 rpm. They turn through Twin Disc MG514 reduction gears of 2:1 ratio.

Both vessels are outfitted with Decca 110 radars, Motorola SSB and VHF radios and Danforth compasses. The boats have ac-

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- 28 or 50 kHz (75 and 200 kHz available).
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universal mounting.

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C-L Couplings are available worldwide in a range of formats and in sizes from 2" through 28". Also available are models for cryogenic use and a full range of sizes with automatic ratchet locking cams.



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Maritime Reporter/Engineering News

commodations for up to six persons in three staterooms.

The Shawn and Craig were built by Halter's Chalmette, La., Division, one of a group of shipyards owned and operated by Halter in the Southeastern United States.

Racal-Decca Marine Expands U.S. Operations

Racal-Decca Marine, Inc., a subsidiary of Racal Electronics Ltd., has announced the expansion of two facilities in the U.S.

The company has relocated its Port of New York Service Center to a new and larger facility located at 70 Jackson Drive (2nd floor), Cranford, N.J. 07016. An enlarged technical staff will be based there to maintain and service marine electronic equipment.

A sales and service support office has been established in the New Orleans area to provide greater assistance to the existing dealer network which services the offshore, fishing, and inland waterway industries. In addition, Racal-Decca Marine is expanding its existing warehouse facility at New Orleans Airport.

The new offices will provide support for all of the Racal-Decca Marine equipment which includes radar, loran, satellite navigation equipment, track plotters, autopilots, integrated ship's instrumentation systems, fuel economy systems and Decca Navigator Receivers. In addition, Racal-Decca Marine, Inc., will provide support for other European manufactured electronics, acting as the exclusive U.S. distributor. These product lines include Sailor Radio of Denmark; Honeywell Elac of West Germany; Microtecnica of Italy; and Walker Logs of England.

For additional information on Racal-Decca Marine, Inc. products and services,

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Ramseyer Promoted At Consolidated Grain



Rob Ramseyer

Consolidated Grain and Barge Company, St. Louis, Mo., has announced the promotion of Rob Ramseyer to the position of sales manager of Freight Merchandising. Mr. Ramseyer joined Consolidated in 1978 as a grain merchant at Consolidated's Terminal at Hennepin, Ill. In 1979, Mr. Ramseyer became a merchandiser of barge transportation, the position he held prior to his recent promotion.

August 15, 1981

Phoenix Management Rig To Be Built By Bethlehem Sparrows Point

Phoenix Management Corporation of Houston has awarded Bethlehem Steel Corporation's shipyard at Sparrows Point, Md., a contract for construction of a mobile offshore oil drilling rig.

Announcement of the contract

was made by William R. Hargrove, president of Phoenix Management, and George S. Hamilton, general manager of the Sparrows Point yard.

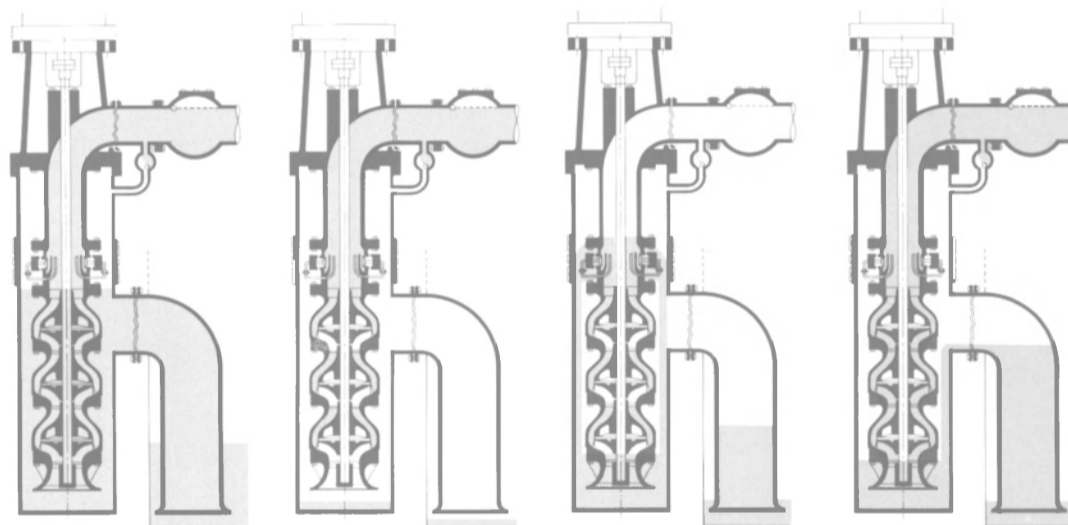
The jackup rig will be capable of drilling in water depths up to 100 feet.

The unit's mat will be 180 feet long by 140 feet wide by 9.6 inches deep, and the drilling platform will be 140 feet long by 100 feet wide by 13.5 inches deep.

Work on the rig is scheduled to begin immediately, with a keel-laying set for December. Delivery is scheduled for July 1982.

This is the fifth oil drilling rig the yard has on order, Mr. Hamilton said. The first complete rig to be built by the yard, the Sabine III, was delivered to Houston Offshore International in June. It was the first such rig built in the United States outside the Gulf of Mexico.

The Worthington self-priming cargo pump with a PrimaVac valve—the most reliable ever offered.



stage 1 Normal Operation stage 2 Loss of Suction stage 3 Recycling stage 4 Re-Prime

The Worthington self-priming cargo pumping system is a single-pump system that combines discharging with stripping, has positive suction lift, and features completely automatic self-priming. It is ideally employed in all tanker and barge cargo systems where a single pump can be used.

The major components in the system are a Worthington vertical turbine pump and the Hudson Engineering PrimaVac valve.

The pump offers extreme system flexibility because the impellers can be changed or stages added to meet system changes. And you have a choice of drive arrangements, so you can select the most efficient driver for your job—motor, engine or turbine. The pump features a spacer coupling that is mounted above the stuffing box for easier maintenance, and flanged column for quick positive alignment. Capacities are to 30,000 gpm and heads to 2,300 feet.

A key factor in the high reliability of the system is its sensitive and fast-acting repriming design activated by the PrimaVac valve. This external-cartridge valve can easily be held in balance by a simple sensing mechanism, does not project into the casing, and does not offer physical resistance or back pressure against the flow of the product through the pump. It will function throughout all pressure ranges and with any product viscosity.

Another important advantage of installing the Worthington cargo pumping system—wherever in the world your vessels travel, they'll never be far from Worthington service facilities. Parts, maintenance, overhaul and repair service is available worldwide.

For complete information on the Worthington self-priming cargo pumping system, contact your nearest Worthington sales office—it's listed in the Yellow Pages—or write: Worthington Group, McGraw-Edison Company, 270 Sheffield Street, Dept. 21-19, Mountainside, NJ 07092

McGraw-Edison

Worthington

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7

**Dr. P.J. McCabe Named
Product Line Coordinator
For Butterworth Systems**



Dr. Peter J. McCabe

Dr. Peter J. McCabe has been appointed product line coordinator of shore tank cleaning systems for Butterworth Systems Inc., the international company that manufactures equipment for tank cleaning, underwater hull cleaning, oil/water separation and high-pressure water jetting.

Prior to joining Butterworth Systems, Dr. McCabe was a project engineer with Exxon Research & Engineering, in their Engineering Technology Department. He started with Exxon in March 1979, after having worked as an environmental consultant.

Dr. McCabe graduated from the University of Notre Dame with a B.S. degree in aerospace and mechanical engineering, and an M.S. and Ph.D degree in environmental engineering.

**\$70.8-Million Conversion
Contract Awarded AMSHIP**

A \$70.8-million contract for the conversion of four Moore McCormack Lines, Inc., general cargo ships into self-sustaining cargo/container vessels has been approved by the U.S. Maritime Administration.

The reconstruction work, to be financed in part under the MarAd construction-differential subsidy (CDS) program, will be done by The American Ship Building Co. at Tampa, Fla., and Lorain, Ohio.

The C-4, Constellation-class ships are the Mormaclynx, Mormaccargo, Mormacvega, and Mormacrigel. They were built at Ingalls Shipbuilding Corp., Pascagoula, Miss., and delivered in 1964-65. Each presently is 550-foot 9 inches long and has a cargo-carrying capacity of 12,666 dwt, including 200 twenty-foot equivalent unit (TEU) containers.

The conversion calls for insertion of 115-foot midbodies and the installation of three 40-ton cranes in each vessel. This will increase their overall length to 665 feet 9 inches, dwt to 15,726, and their container capacity to 628 TEUs.

American Ship Building's negotiated fixed price for the reconstruction of each ship is \$17,477,995, the amount eligible for subsidy consideration. The CDS portion approved for each is \$7,527,995, or 43.07 percent of the total.

This represents the difference between the fixed price and the estimated foreign cost of \$9.95 million for each vessel. In a final order and opinion recently, the Maritime Subsidy Board approved Japan as the fair and representative foreign shipbuilding center.

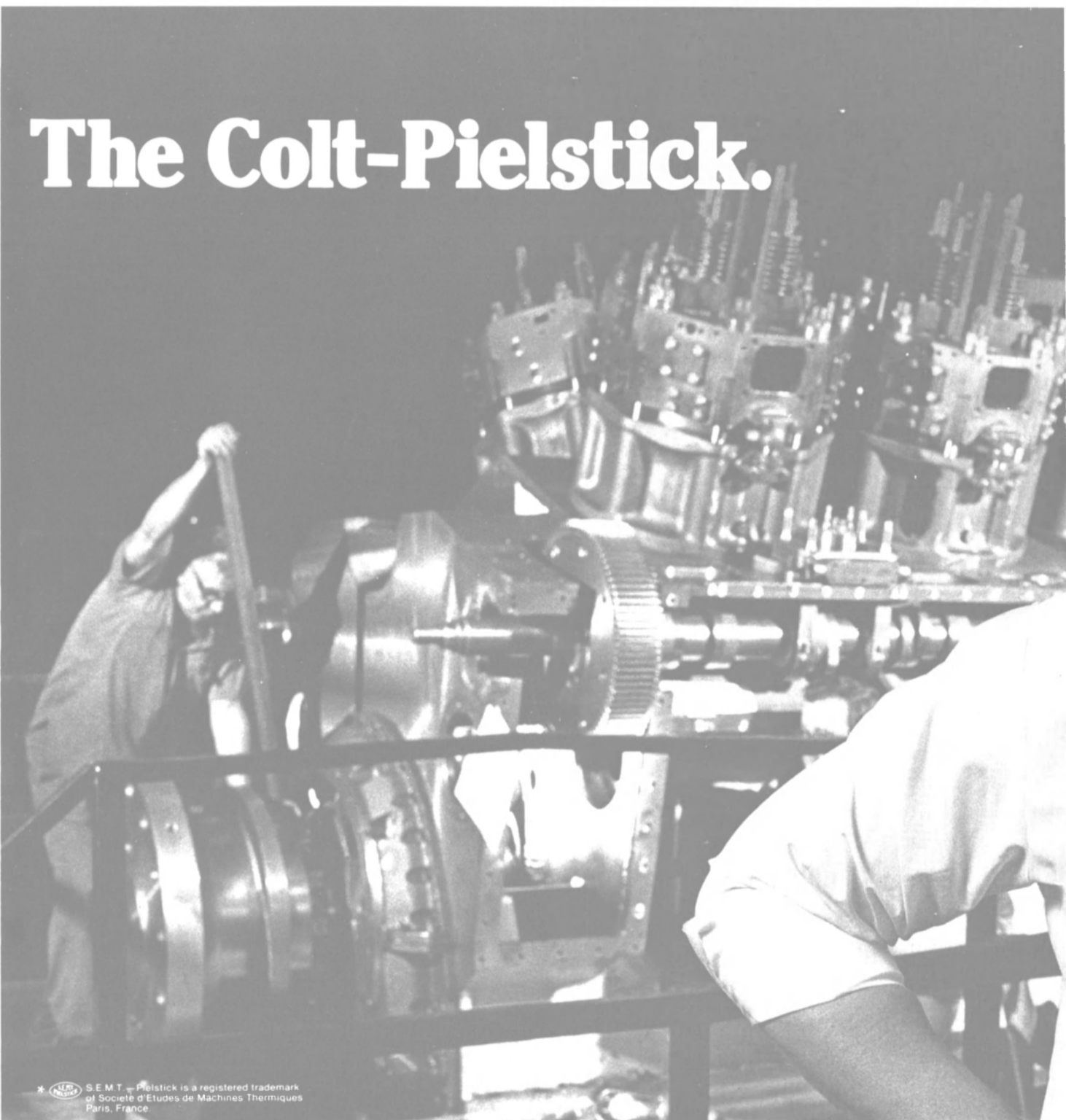
In addition to CDS, totaling some \$30 million, the federal government will pay approximately \$200,000 for each of the four vessels for national defense fea-

tures. Moore McCormack, on its own account, will pay the shipyard some \$2 million additionally for maintenance and repair items on the four ships.

The reconstructed vessels will be designated MA Design C6-S-60c class ships.

Addition of the three 40-ton cranes on each will give them self-cargo handling capability, one of the national defense features approved by MarAd and the De-

partment of the Navy. The rotating cranes, with an outreach of 25 feet, would enhance the vessels suitability for wartime use. Another defense feature to be incorporated will provide for carrying two 20-foot containers in tandem where 40-foot containers are to be stowed. Both features will be put to commercial use by Moore McCormack and, for that reason, their cost will be jointly shared as subsidized items.



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fuel with more than 55 million hours of operation. In today's economy, that kind of experience can't be overlooked.

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No one offers more flexibility in horsepower ratings. Fairbanks Morse offers you heavy duty Pielstick 4-cycle marine diesels with a 6,000 to 27,000 bhp rating range. Our

Bender Shipyard Builds Own Floating Drydock

Bender Shipbuilding and Repair Co., Mobile, Ala., has begun construction of a large floating drydock which will expand the yard's ship repair capabilities. The drydock will be able to handle ships up to 700 feet long and 20,000 deadweight tons.

The drydock has been designed in self-sufficient sections, each 100

feet long, making construction feasible for the yard, and allowing the dock to be divided to handle smaller ships. It will sit on a 26-acre site on the east side of the river, with a 40-foot depth in the channel.

The yard recently acquired an 8,000-ton floating dock from the U.S. Navy for repairs to small vessels. Deck and engine repairs are carried out on many of the ships which visit Mobile, and the

new drydock will enable the yard to handle a full range of repair and maintenance work.

Building work at the yard continues, but emphasis is moving from fishing vessels to oil-related vessels. The yard is currently completing the last of an order for four shrimp boats destined for Japan. Six 22.5-foot tuna boats are also under construction for Mexico. Following these is a 112-foot utility boat and four

185-foot supply vessels for the State Boat Corporation.

\$1.5-Million Tanker Contract Signed By Halifax Shipyards

Halifax Industries Limited, Nova Scotia, has signed its largest ever ship repair contract.

The contract, worth over Canadian \$1.5 million, is with Imperial Oil Ltd. for the modernization and repair of the 6,566-deadweight-ton tanker Imperial Quebec.

The vessel, with a length of 114 meters (about 374 feet) and width of 15.9 meters (52 feet), delivers refined oil products from Imperial Oil's refinery at Dartmouth, Nova Scotia, to terminals in Atlantic Canada.

The contract, which will be carried out at Halifax Shipyards, begins on September 1 and will take 10 weeks to complete. The contract calls for:

The removal of existing cargo pumps and the installation of new cargo pumps as well as cargo, ballast, bilge, steam and exhaust piping in the midship cargo pumproom. The existing four steam reciprocating pumps will be replaced by two steam turbine-driven centrifugal pumps. A vacuum stripping system will be incorporated on each pump.

The installation of a tank washing/stripping piping system in the cargo tanks.

The application of external hull coatings.

The application of inorganic zinc coatings in all cargo tanks.

The modification and upgrading of crew accommodation and complete modification of the hospital facilities.

General repairs, including the removal and replacement of cargo piping, extensive ducting installation, tailshaft survey, main engine repairs, and repairs to stern bearings, tubes and glands.

Nordquist Appointed At Twin Disc, Inc.

Twin Disc, Incorporated, Racine, Wis., has announced the promotion of Curtis W. Nordquist to manager-product marketing, responsible for strategic development of the company's current and future domestic product line.

In addition, he will supervise the company's domestic product managers and application engineers, and direct the development and marketing strategy for new products.

Mr. Nordquist began his career at Twin Disc in 1973 as an application engineer. Prior to this new appointment, he was assistant product manager-hydraulic products. Mr. Nordquist holds a mechanical engineering degree from the University of Wisconsin-Madison, and an MBA degree in business administration from the University of Wisconsin-Oshkosh.



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38D8-1/8 series opposed piston engines can deliver 700 to 4,200 horsepower. No one else comes even close.

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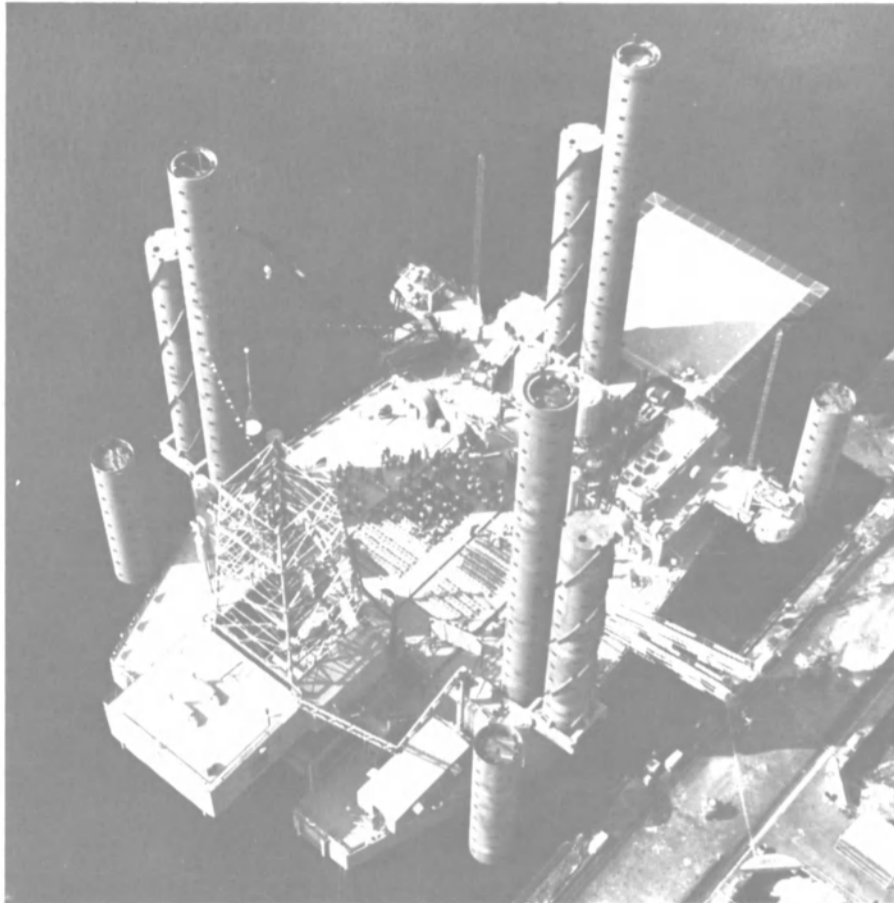
Colt Industries



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Fairbanks Morse

Engine Division



J Storm XVI Is 50th Jackup Commissioned At Bethlehem, Beaumont

Southern Drilling Company, a wholly owned subsidiary of Marine Drilling Company, and Bethlehem Steel Corporation's Beaumont, Texas, shipyard, recently commissioned a 250-foot water depth mobile offshore drilling unit.

The rig was christened J Storm XVI by its sponsor **Mrs. Jack K. Larsen**, wife of the executive vice president of Mesa Petroleum Company. Senator **John G. Tower**, senior Senator from Texas, gave the keynote address at the ceremony.

The multimillion-dollar rig has been under construction for nearly 10 months and, upon delivery, will begin drilling operations in the Gulf of Mexico for Mesa Petroleum Company.

Sherman C. Perry, general manager of the shipyard, said this commissioning marks a significant milestone in the history of the shipyard. It extends to 50 the number of jackup drilling units commissioned by the Beaumont yard since it built the first 100-foot water depth jackup in 1954. The commissioning also marks the fifth rig to be delivered this year by the yard, as well as the 87th offshore rig delivered by Bethlehem yards.

The J Storm XVI is a mat-supported jackup designed for deepwell drilling operations. On location, the rig will have a total variable drilling load capacity of 4.5 million pounds and handle hook or rotary, plus setback loads of 950,000 pounds.

The rig consists of a platform

measuring 176 feet by 109 feet supported by three 12-foot-diameter columns fixed to a mat that is 210 feet by 170 feet. Outfitted with deepwell drilling equipment, the rig can operate in waters of up to 250 feet while experiencing forces resulting from 70-knot winds and 35-foot-high waves. The J Storm XVI contains onboard, air-conditioned living accommodations for 48 persons.

This marks the 18th time that one of the 50 Beaumont rigs was commissioned for the **James C. Storm** interests.

The J Storm XVI is No. 18, and the J Storm XVII No. 19 is scheduled for commissioning and delivery later this year.

Mr. Storm's dealings with the yard follow a direct line back to 1949. Then in November 1954, the Beaumont yard delivered the Mr. Gus, the first mobile drilling platform capable of operating in 100 feet of water.

Mr. Gus was built for the C.G. Glascock Drilling Company; Mr. Storm became a partner in that company shortly after he joined it at the close of World War II. In 1957, the Beaumont yard delivered Mr. Gus II, the prototype of the mat-supported jackup rigs built at the yard today. It was the first mobile drilling unit that could drill in up to 150 feet of water.

Mr. Storm was involved with that rig also. And Mr. Gus II, after 24 years of service, is still drilling for oil and natural gas.

After the Glascock interests disposed of their drilling rigs, Mr. Storm formed Storm Drilling Company for whom the Beaumont Yard built Stormdrill I, Stormdrill II, Stormdrill III, and Stormdrill IV. Another Storm company, Southern Marine Drilling Company, ordered Stormdrill V. Subsequently Storm Drilling Company was sold.

Mr. Storm then formed Marine Drilling Company and ordered J Storm I from the Beaumont shipyard.

J Storm I was initially ordered with capability to operate in 225 feet of water. Mr. Storm asked if the columns could be strengthened and lengthened. The yard added 25 feet of capability, and

the rig became the prototype for Bethlehem's series of 250-foot jackup rigs.

He also ordered the first jackup drilling unit capable of working in up to 375 feet of water. The yard designed this platform to utilize telescoping legs so it would be manageable under tow to different locations, yet be able to work in deeper waters. This rig, J Storm VII, was delivered in 1976.

Mr. Perry, general manager of the yard since June 1, 1978, reported that Beaumont has work for the next 1½ years. "We have orders for 12 offshore mobile drilling units, which will take us into 1983, and negotiations are being conducted for additional contracts."

The general manager said that the yard has delivered four jackup drilling units thus far this year, and anticipates delivery of four or possibly five more by the end of the year.

That would match or nearly match 1980, when nine drilling units were delivered. For 1978 and 1979, the yard delivered five units each year.

Contracts on hand and the customers are: Marine Drilling Company, one unit in addition to the J Storm XVI; Houtech Energy, Inc., four units; O & U Drilling Co., Inc., one unit; Griffin-Alexander Drilling Co., three units; Teledyne Movable, one unit, and Alfa Drilling, one unit.

The yard presently has more than 2,300 employees at work on the drilling units with two shifts generally being worked, and can accommodate six units under construction simultaneously.

The shipyard's principal products are offshore mobile drilling units, primarily jackups, and oil and gas production and storage facilities for offshore service. The Beaumont yard has built many ships and barges, principally for the petroleum industry, and can handle any repair, reconditioning, conversion or jumboing of ships.

It has a floating drydock with lifting capacity of 17,500 tons and extreme length of 648 feet. Its mobile floating crane has a capacity of 500 tons.



James C. Storm has been a long-time customer of Bethlehem Steel Corporation's shipyard at Beaumont.



Sherman C. Perry, general manager of Bethlehem Steel Corporation's shipyard at Beaumont, Texas.

Inert Gas Generators To Operate On #6 Oil —Literature Available

Nine San Clemente-class tankers operated by Apex Marine Corporation will be retrofitted with pretested inert gas generators from Foster Wheeler Boiler Corporation, Livingston, N.J. The generators will be designed to operate on #6 heavy oil instead of #2 diesel oil, the usual fuel for this type of equipment.

Three of the Apex tankers will be modified at the San Diego, Calif., yard of National Steel and Shipbuilding Company (NASCO), while the other six will be fitted at the Jacksonville (Fla.)

Shipyards, Incorporated. Each of the generators is capable of supplying 6,345 standard cubic feet per minute of inert gas at 2.8 pounds per square inch. All units are scheduled for delivery and installation by December 1981.

The Foster Wheeler inert gas generators are built and sold in the United States under license to Moss Rosenberg Verft of Norway. Before delivery, their performance is tested at a facility at Tulsa, Okla., the only one of its kind in this country. A matching test site is located at Moss Rosenberg Verft.

For complete literature on inert gas generators from Foster Wheeler,

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Stop smoking. ITT Mackay now offers four ways to improve fuel efficiency.

ITT Mackay, known on the bridge for reliable marine communications systems, now enters the engine room. Featuring equipment manufactured by proven performers like the Wager Company and VAF Instruments, ITT Mackay now offers four products to meet your fuel conservation needs.

Smoke Indicator: Available in both visual and photoelectric models, the Wager smoke indicator can distinguish between white and black smoke. It indicates, at a glance, the direction of changes to boiler controls.

Combustion Optimizer: This unit fine tunes the air/fuel ratio of your automatic combustion control system. It receives input from an electronic smoke indicator or oxygen analyzer monitoring combustion gases. The result is a reduction in fluctuations around the desired control point, permitting a much lower level of excess air while maintaining smoke-free operation.

Viscotherm® Viscosity Control: The Viscotherm unit has been proven effective and reliable in both diesel and steam propulsion plants for 20 years.

Fuel Metering: ITT Mackay offers both piston and vane type pos-

itive displacement meters which can measure flows from 0.05 gal/hr (piston) to 425 gal/min (vane).

If you're thinking about fuel conservation systems, either retrofit or new construction, think ITT Mackay. To find out more about ITT's engine room products, call or write: ITT Mackay, Dept. 370, 2912 Wake Forest Road, Raleigh, NC 27611. Or telephone (919) 829-3134.

ITT Mackay

Three Key Appointments Announced In Marine Department At Texaco

James A. Cole Jr., vice president in charge of Texaco Inc.'s Marine Department, has announced the following appointments: **Robert O. Sanders**, manager-chartering, succeeding **Robert G. Gingrow** who elected to take early retirement on June 1, 1981, after 37 years of service; **James F. Gaffney**, manager-economics and planning, succeeding **Mr. Sanders**; and **Erwin A. Harisch**, manager-operations, succeeding **Mr. Gaffney**.

All three will continue to be located in the company's Harrison, N.Y., offices.

Mr. Sanders was graduated in 1970 with a Bachelor of Business Administration degree in accounting from Bernard M. Baruch College of the City University of New York. He had joined Texaco in 1958 in the U.S. Marketing Department and transferred to the Marine Department in 1963. He

was named assistant manager-chartering in 1973 and manager, economics and planning in 1976.

Mr. Gaffney was graduated in 1953 with a third mate's license from the Royal College of Technology in Glasgow, Scotland, and received his master's license in 1962. He had joined Texaco Overseas Tankship Limited in London in 1959 and subsequently sailed as master aboard Texaco tankers. He was named marine superintendent in the London office in 1974. In 1980 he was assigned to the Harrison offices of Texaco Inc., as manager-operations.

Mr. Harisch was graduated in 1948 from the New York State Maritime Academy with a marine engineer's license and joined Texaco in 1949 as an engineer aboard Texaco tankers. He obtained his chief engineer's license in 1953. He was named inspector-new construction in the Marine Department in New York in 1957, and superintendent-maintenance and repairs for the Texaco Panama fleet in 1962. In 1973 he was

named manager-maintenance and repairs for the Marine Department of Texaco Inc.

Chromalloy Acquires Flowers Marine Group For About \$15 Million

Chromalloy American Corporation, St. Louis, has announced the completion of its acquisition of Flowers Marine Group, Inc., a privately held barge company, from its founder, **J. Russell Flowers**, for approximately \$15 million.

Approximately 70 percent of the purchase price was paid with 400,000 newly issued shares of Chromalloy common stock and the remainder with promissory notes and cash. Chromalloy had 14.7-million common shares outstanding prior to the Flowers Marine Group purchase. The purchase price is subject to adjustment as the result of a closing audit.

Frank P. Nykiel, president and chief executive officer of Chromalloy, said the purchase is in line

with Chromalloy's policy of strengthening its main core businesses. Chromalloy's Inland Marine Group of barge companies comprise the third largest barge system in the United States.

Headquartered in Greenville, Miss., the Flowers Marine Group had gross revenues of about \$50 million in 1980. Flowers operates 356 covered and open barges, eight towboats and two tugboats. Its cargoes consist mostly of grain and coal, and it has a contract to supply substantial tonnages of coal to the Florida Power Company.

Thomas J. Barta, president of Chromalloy's Transport-Marine Group, said the Flowers Marine purchase brings the aggregate carrying capacity of barges operated by Chromalloy to about 1,750,000 tons. **J. Russell Flowers**, a key individual to barge operations, will join Chromalloy's Transport-Marine Group in an executive capacity.

Chromalloy is a multi-industry business with sales of \$1.5 billion in 1980 and net earnings of \$44.4 million.

Tracor Wins \$8.3 Million Four-Year Navy Contract

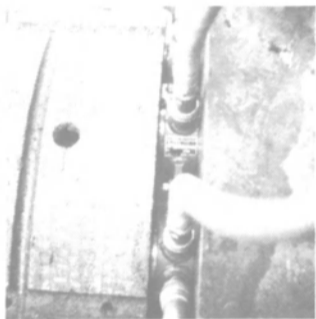
The Naval Sea Systems Command, Department of the Navy, Washington, D.C., has awarded Tracor, Inc. an \$8.3-million four-year contract for technical and engineering support for the FFG-7 Class Guided Missile Frigate Acquisition Program.

William C. Moyer, Ph.D., group vice president for Tracor Applied Sciences, said that Tracor engineering managers, systems engineers, and field test engineers located in Arlington, Va., Bath, Maine, San Pedro, Calif., and Seattle, Wash., are involved in the program, providing engineering analysis, technical evaluation, and management support.

Tracor has been providing engineering and technical support for the FFG-7 Class Guided Missile Frigate Program since the mid-70s. This support has included providing combat system integration; development of test plans, procedures, and specifications; technical evaluation and analysis of proposed combat systems and engineering systems developments; coordination of test schedules; and test conduct. This new contract represents a continuation of these efforts as part of the FFG-7 Class Follow Ship Construction and Post Shakedown Availability programs.

Headquarters for the contract work is Tracor's Surface Ship Office in Arlington, Va., under the general management of **William F. Thompson**, division vice president and director of the Systems Technology Division. Reporting to **Mr. Thompson** on the program are **William Pugh**, division director of Ship Systems; **Thomas W. Cass**, director of the Surface Ships Department; and **James P. Flanigan Jr.**, program manager for the FFG-7 Program.

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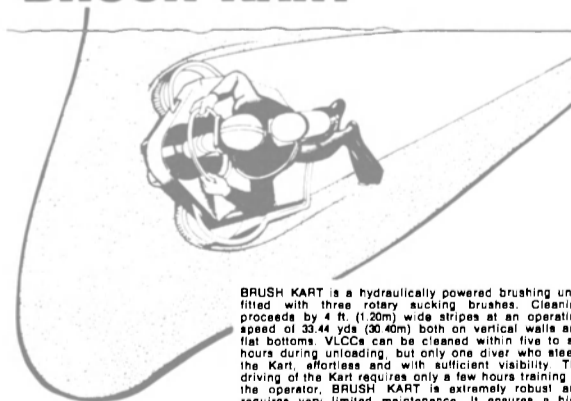
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Luquette Sales Manager For Offshore Express



Edwin Luquette

The appointment of **Edwin (Eddie) Luquette** to the position of sales manager of Offshore Express, Inc., has been announced jointly by **Robert C. Schmidt**, vice president and general manager of the Houma, La.-based marine transportation firm, and **Billy Blakeman**, vice president, marketing of the Lafayette office.

In his new position, Mr. Luquette will be responsible for the Gulf Coast sales of Offshore Express's "Express Fleet" of crew, supply and utility boats. The company has recently announced a \$10-million expansion program which will bring the "Express Fleet" to 19 by the end of 1981. Offshore Express's crewboat capability is one of the Gulf's largest.

Prior to his new appointment at Offshore Express, Mr. Luquette spent eight years with TBW Industries, where he was most recently the chief estimator of the Deck Machinery Division. He also was involved in deck machinery and steering systems sales. He held positions previously with Avondale Shipyards and B&M Industries. He will be located in the company headquarters on Grand Caillou Road in Houma.

Alexander & Alexander Offers Marine Insurance Capabilities Brochure

Alexander & Alexander, New York, N.Y., one of the largest marine insurance brokers in the world, recently published an illustrated capabilities brochure.

The 16-page booklet outlines Alexander & Alexander's scope of marine insurance coverages for vessels, cargoes, offshore drilling, as well as special coverages and claims handling.

For further information on Alexander & Alexander marine insurance and a free copy of their brochure,

Write 24 on Reader Service Card

ITT Mackay To Market Oil Pollution Monitoring Equipment In The U.S.

Expansion of marine petroleum monitoring and processing equipment in the U.S. market was announced recently by **Alan Finkel**, vice president of marine opera-

tions for ITT Mackay Division, Raleigh, N.C., a unit of International Telephone and Telegraph Corporation.

ITT Mackay, a division of ITT Telecommunications Corporation, has assumed exclusive representation in the U.S. for sales and service of ITT Oilcon™ oil-in-water monitoring equipment and of ITT's marine fuel-oil blending systems.

Oilcon systems use lasers to rapidly and reliably give contin-

uous high-accuracy measurements of petroleum-product contamination in water discharged into the environment from ships or shore-based installations. Fiber optic cables transmit the readings to indicator and alarm devices.

A new marine fuel-oil blender, recently introduced by ITT VAF Instruments, is also available in the U.S. exclusively from ITT Mackay. This device reduces fuel cost for auxiliary diesel engines that are capable of burning heav-

ier distillate fuel. Heavy fuel carried for the main diesel is combined in a static mixer with high-quality diesel oil to produce a fuel of predetermined viscosity. With this onboard system, a mixture that minimizes fuel costs for a particular installation can be produced keeping maintenance costs within reasonable bounds.

For further information on Oilcon and the marine fuel-oil blender,

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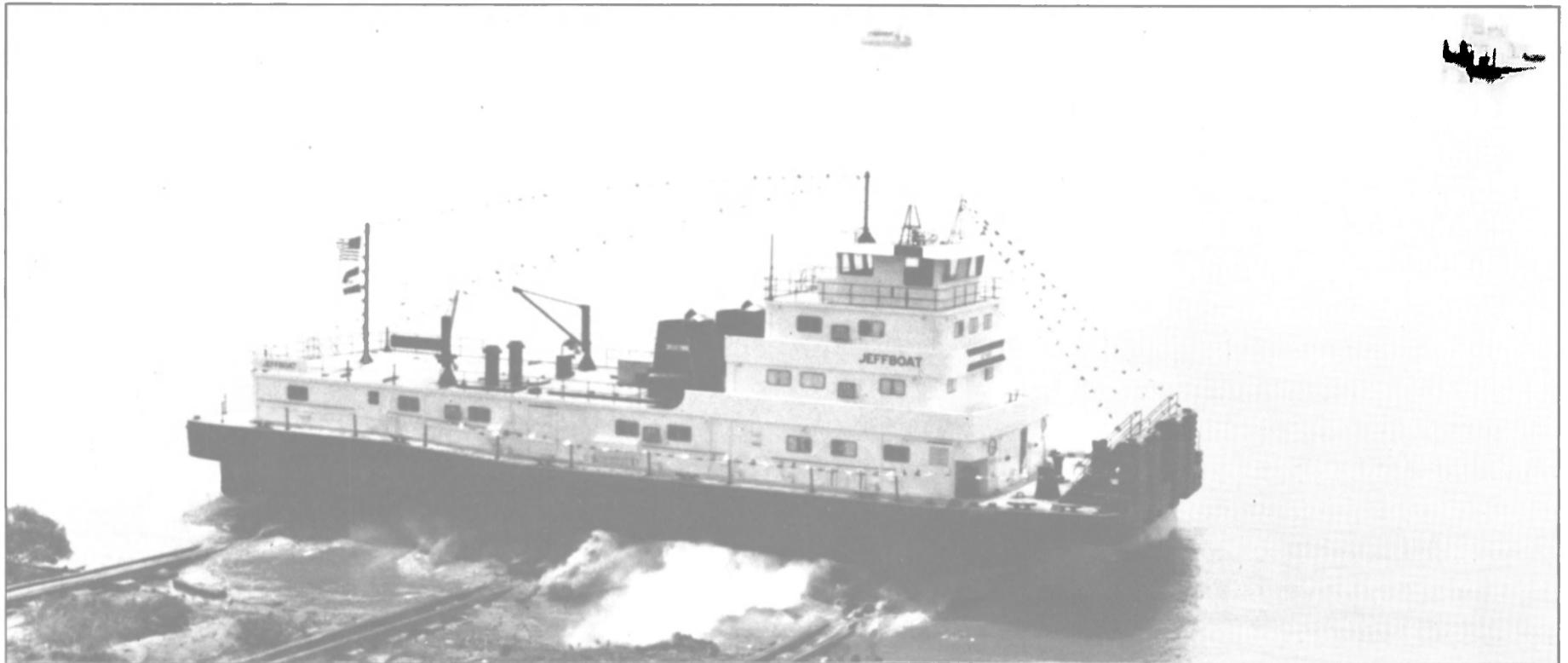
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M/V Jeffboat

Throngs of spectators came to the Jeffboat, Incorporated, Jeffersonville, Ind., shipyard recently to witness the dual christening and launching ceremonies of the motor vessel Jeffboat, a 6,000-horsepower vessel named to honor the company's accomplishment as an industry leader over the past several years.

The honor was given to Jeffboaters in recognition of the shipyard's recent spectacular production records. Beginning in 1979 and continuing today, the shipyard has enjoyed an unprecedented demand for marine equipment. Both 1979 and 1980 were banner

years for the company, with the 1980 production of 528 hulls topping the previous production high of 442 hulls set in 1979.

The new towboat will join the fleet of American Commercial Barge Line Company (ACBL), a sister company of Jeffboat, Incorporated, when she is completed.

Receiving special honors on that day were **J. Kirk Rowell** and **Frances Brendle**, the most senior male and female employees of Jeffboat. They were chosen as cosponsors of the new vessel for their many years of dedicated service to the company. In that capacity, Mr. Rowell stood by

while Mrs. Brendle spoke the words, "I christen thee the motor vessel Jeffboat," and cracked a bottle of champagne soundly against the hull of the towboat.

Orders were then given to cut the ropes holding the boat to the launchways, and the towboat slid down the ways.

When she is completed and outfitted later this summer, the Jeffboat will go into service as a line boat for ACBL, moving tows of up to 30 barges on all sections of the country's inland rivers.

Both ACBL and Jeffboat are part of the Inland Waterways Division of Texas Gas Transmission Corporation.

M/V JEFFBOAT

Principal Dimensions & Tonnage

| | |
|-------------------------|-------------------|
| Length | 145 feet |
| Breadth | 48 feet |
| Depth | 11 feet 6 inches |
| Draft, Normal Operating | 8 feet |
| Draft, Loaded | 8 feet 11½ inches |
| Displacement, Normal | 1,294 tons |

Capacities

| | |
|----------------|---------|
| Fuel oil | 101,900 |
| Fresh water | 9,800 |
| Sanitary water | 14,500 |
| Lube oil | 3,000 |

Propulsion

| | |
|--------------|---|
| Main engines | Two Alco diesel, 16 cylinder, Model 251F, 3,240-hp each |
|--------------|---|



Frances Brendle takes a sure aim at hull of the M/V Jeffboat. Looking on are Robert W. Greene III, president, Jeffboat, Inc.; J. Kirk Rowell, cosponsor; H.J. Bobzien Jr., president Inland Waterways Division; Carl Cannon, marine superintendent, ACBL; J. Robert Hard, group vice president, ACBL; Jeanne Brendle, daughter of Mrs. Brendle; Comdr. Anthony C. Alejandro, USCG; and in foreground TV cameraman.



Shown, left to right, are: Mrs. Lucille Rowell, and cosponsors J. Kirk Rowell and Frances Brendle.

Reverse reduction gears ... Two Lufkin, Model RHS 3624, 4.66 to 1 ratio

Propeller shafts ... National Forge 10½-inch alloy steel forging

Propellers ... Two Coolidge, five-blade, 110-inch stainless steel

Steering gear ... Jeffboat — Two steering rudders, four flanking rudders, operated by independent hydraulic rams

Auxiliary Machinery

Main generators ... Two Detroit Diesel-Delco 125-foot kw, 450-volt, 3-phase, 60-Hertz, driven by GM 7083-7005 diesel engines

Switchboard ... Enclosed, dead front, control systems

Heating and air-conditioning ... Hot water — Heat Recovery Package SHPS-1, Dunham-Bush A/C, 20 tons total capacity

Air Compressors ... Two Westinghouse, Model 5320B, rated 23.8 CFM at 250 psi

Fire protection ... Eight fire stations, pump — Ingersoll Rand, Model 3x2x8HC, 200 gpm at 230 foot head

Fixed Halon system for engine room ... Orr Safety Equipment Co., Fixed Halon 1301 system for engine room; fixed and semi-fixed systems, portable extinguishers elsewhere

Deck Machinery

Capstans ... One Schoellhorn-Albrecht Co. type 22300, 10 hp

Winches ... Four Beebe, Model 62, 5 hp

Navigation & Communication Equipment

Radar ... Sperry MK 4016

Digital depth indicator ... Raytheon DE-760

Intercom ... TOA/Moakler

Sound-powered telephone ... Henschel

Searchlight ... Carlisle & Finch, two Xenon

Air horn ... Kahlenberg, Model Q-4

Swing-o-meter ... Shannon, Model 2B

Radio ... 2 Intech M80 VHF, 1 Intech M2500 SSB

brochure which is available on request.

Specifications for the company's newest jackup design, the Super 300, point out the versatility of this rig for harsh environments with its fixed and variable load of 10,500,000 pounds. The combination slot and cantilever drilling pattern allows full design storm capability for drilling exploratory wells through the slot. The Class 150-88-C "Gorilla Rig," designed for the most hostile operating en-

vironments, is also explained in detail.

In addition, the brochure provides information on all other classes of Marathon LeTourneau jackup rigs. It includes a wealth of information, full color photos, drawings and a removable fold-out section containing specifications and drawings for seven platform designs.

For a free copy of the new Marathon brochure,

Write 25 on Reader Service Card

Metro Machine Awarded \$7.4-Million Order For LST Overhaul Work

Metro Machine Corporation, Norfolk, Va., has been awarded a \$7,410,747 firm fixed price contract for the regularly scheduled overhaul of the USS Spartanburg County (LST-1192). The Supervisor of Shipbuilding, Conversion and Repair, USN, Portsmouth, Va., is the contracting activity.

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Raytheon Receives Radar Order For \$36.6 Million

Raytheon Company, Equipment Division, Wayland, Mass., is being awarded a \$36,680,153 firm fixed price contract for AN/SPS-49 radars plus AS-3263, SPS-49 antenna together with related data, field services and support, and attendant equipment and spares to support the FFG (guided missile frigate) new construction, the Fleet Modernization Program, and FMS (foreign military sales) requirements. Work will be performed in Waltham, Mass. The Naval Sea Systems Command is the contracting activity. (N00024-81-C-7038)

New 34-Page Brochure Describes Marathon Offshore Drilling Rigs

The complete line of self-elevating mobile offshore drilling platforms designed and manufactured by Marathon LeTourneau Offshore Co. is illustrated and described in a new 34-page, full-color



Dravo SteelShip Delivers Coastal Tugboats 'Sioux' And 'Mava'

Dravo SteelShip Corporation, Pine Bluff, Ark., recently delivered two 75-foot by 28-foot by 12.5-foot steel coastal tugboats to Apex Oil Company of St. Louis, Mo.

The tugboats, the Sioux, and the Mava (shown above), are powered by twin Detroit Diesel 16V-149TA engines rated at 2,200 hp. The engines are equipped with Reintjes Model WAV800, 6:1 ratio reduction gears. Fernstrum D-1672 keel coolers provide for main engine cooling.

Twin Detroit Diesel 4-71 engines with 75-kw generators supply ship's power. One Carlisle and Finch 15-inch, 1,000-watt incan-

descent searchlight and one 19-inch carbon arc searchlight have been provided. Kahlenberg air horns are pilothouse mounted. Electronics include a SBA Model 312B single sideband radio, a Necode 321AR Digital Encoder/Decoder, two Motorola Triton 55/75 VHF and two Epsco Model 310/6 radar and were supplied by ITT Mackay Marine.

Main engines and generator sets were supplied by Western Diesel of St. Louis. A telephone booth supplied by Acoustical Development is located in the engine room.

The Wagner steering system was supplied by H.H. Hough

Company, and the engine controls are Wabco.

Each vessel is equipped with two Kahlenberg four-blade, stainless-steel, 80-inch propellers.

Tank capacities onboard each vessel are: fuel, 20,000 gallons; potable water, 5,000 gallons; clean lube oil, 500 gallons; and dirty lube oil, 500 gallons.

Each tugboat is designed with four staterooms to accommodate a crew of eight. Each stateroom is furnished with built-in double wooden bunks, double hanging lockers, and desk and chair.

Dravo SteelShip Corporation is currently building seven 85-foot towboats, two 65-foot towboats, and several other pieces of marine equipment.

NABRICO Dedicates New Facilities



New facilities at the Nashville Bridge Company (NABRICO) A.I. Myhr Plant in Ashland City, Tenn., were dedicated recently. From left are **Raymond Cotten**, plant manager at Ashland City; **Bill Sanders**, senior employee at the facility; and **Al Zang**, president of NABRICO. The \$2-million expansion was designed to meet the ever-increasing market demands for hopper barges, tank barges and oceangoing vessels.

New facilities at the Nashville Bridge Company (NABRICO) A. I. Myhr Plant, Ashland City, Tenn., were officially dedicated recently. **Bill Sanders**, the senior employee at the plant, cut the

large ribbon linking two cranes to open the company's new fabrication building. **Al Zang**, president of NABRICO, presided over the ceremonies, which attracted nearly 800 employees, families and friends.

Reviewing the growth of the Ashland City plant, which opened July 29, 1974, Mr. **Zang** noted that the first barge was launched there in December of that year. Through September 1980, a total of 560 barges had been delivered at the Ashland City yard. For 1981, he projected that 205 barges will be launched at the plant. Mr. **Zang** also noted that when the first barge was launched, there were 75 employees at the facility. Today, there are 295.

According to Mr. **Zang**, the Ashland City expansion "increases the company's production there by approximately 15 percent, and provides NABRICO with the capabilities of producing oceangoing vessels there. The expansion provides NABRICO with the added flexibility necessary to meet the ever-increasing market demands for hopper barges, tank barges and oceangoing vessels," he said.

Construction, which required some 18 months, was planned in phases so as not to interfere with the regular operation of the Ashland City facility.


The \$2-million expansion added some 30,000 square feet to the fabrication and assembly areas, representing a 100 percent in-

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Tacoma Boat Launches \$3.4-Million Oil Test Barge For Sohio Use

A new \$3.4-million, 214-foot petroleum products barge for operating in Arctic waters was launched recently by Tacoma Boatbuilding Co., Tacoma, Wash., for The Standard Oil Company of Ohio (Sohio). Gini Savage, wife of Sohio Alaska Petroleum Company president, Michael Savage, was sponsor at the launching, and

christened the vessel "Investigator."

The new Ice Class II vessel will be used to support Sohio Alaska Petroleum Company's exploratory drilling program in the Beaufort Sea off Alaska's northern coast. It will be the first ice-class barge ever to be used in the area.

It is designed with a double hull for maximum environmental protection. The Investigator can store and transport potable water. The deck is designed for transport of Sohio's offshore drilling

rigs. In the Beaufort Sea, Sohio and other oil companies drill exploratory wells from man-made gravel islands or from natural barrier islands. This barge will be anchored adjacent to these low elevation islands.

The Investigator will be instrumented to log and record ice movements and pressures. These data will assist in providing future designs for ice class vessels.

This barge has an overall length of 214 feet 6 inches, maximum beam of 65 feet, and a draft

of 11 feet 11 inches. Its cargo capacity is 4,000 metric tons. When fully outfitted, it will have two 125-kilowatt diesel generators and two 50-horsepower fuel pumps to supply drilling crews with fuel and electric power.

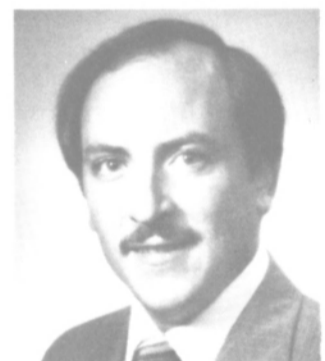
In addition to providing fuel and water supplies, equipment storage, and transport, the Investigator will offer limited camp facilities and shelter from severe Arctic weather.

"Having the opportunity to build the Investigator and to conduct detail design work for this test barge was very important to us," commented Frank B. Lynott, chairman of Tacoma Boat. "We strive to be in the forefront of marine vessel technology, and we appreciate the opportunity that Sohio is giving us to construct and deliver this important component of their exploration program for Alaskan waters."

Detail design and engineering was conducted by Tacoma Boat engineers in conjunction with designer Peter S. Hatfield, Vancouver, British Columbia, consulting naval architect, and Swan Wooster Engineering, Inc., Portland, Ore., consulting engineers for Sohio Alaska Petroleum Company.

Tacoma Boatbuilding designs and constructs medium-size naval and patrol vessels, offshore rigs and specialized vessels for the petroleum industry, and large commercial fishing boats. The company operates three shipyards in Tacoma and has 2,400 employees.

Todd New Orleans Names Beckley Technical Manager



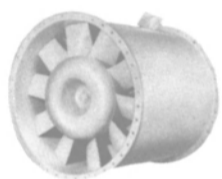
Stephen A. Beckley

Stephen A. Beckley has been appointed technical manager at the New Orleans Division of Todd Shipyards Corporation, it was announced recently by John Meghrian, vice president-Gulf/East Coast Region.

Mr. Beckley comes to Todd with extensive experience both in operations and engineering, and was most recently works manager at Blount Marine in Rhode Island. Prior to this, he was senior manufacturing engineer with the Falk Corporation, and a project manager at the Portsmouth Naval Shipyard. He served as an officer in the U.S. Navy, and was chief engineer on the USS York County.

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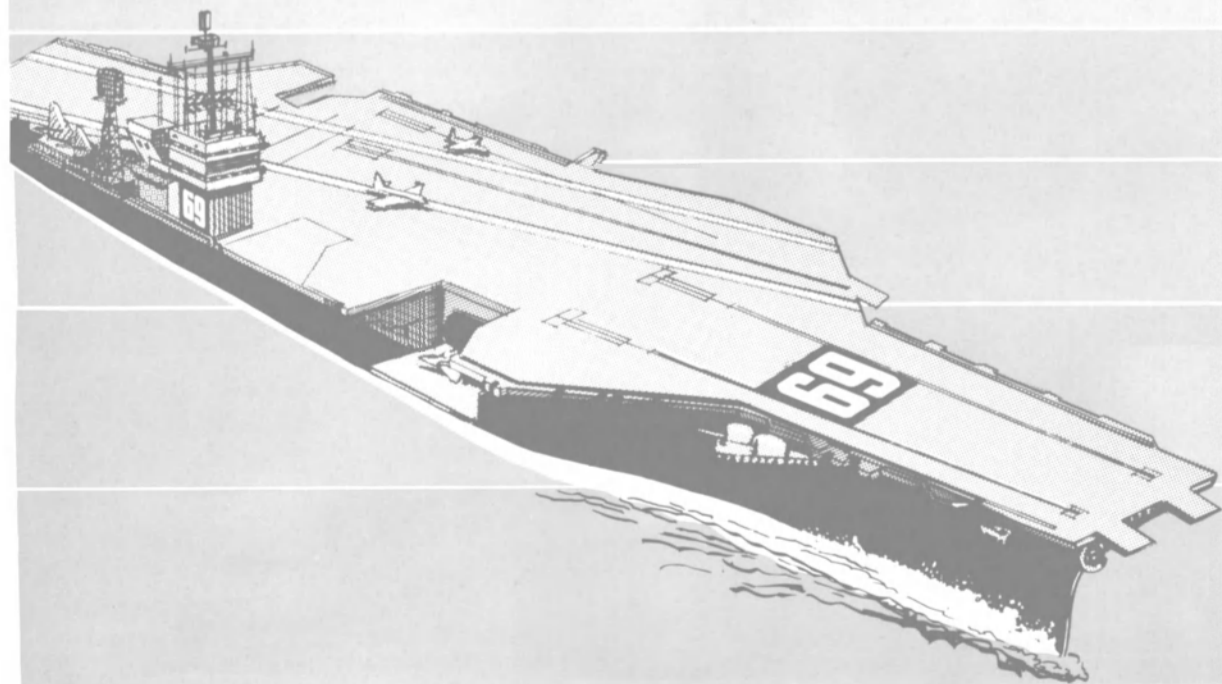
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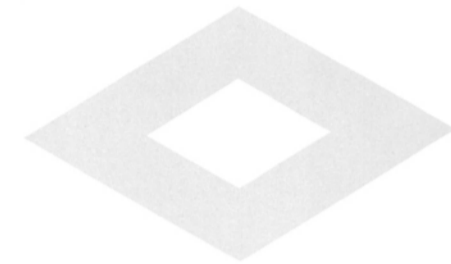
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Docking the EL PASO HOWARD BOYD at the
Columbia LNG Corp. Terminal at Cove Point, Md.



Offshore Express In \$10-Million Expansion— 'Lightning Express' Delivered By Progressive Shipbuilders

A \$10-million expansion program has been announced by Offshore Express, Inc., a Houma, La.-based marine transportation firm.

Robert C. Schmidt, vice president and general manager of Offshore Express, said the company has taken delivery of the 102-foot crewboat Lightning Express

(shown above) by Progressive Shipbuilders and Fabricators of Houma. This is the first of five new boats the company will add to their fleet in 1981. Other fleet additions include a 166-foot liquid mud supply boat in July; a 110-foot utility boat in July; a 110-foot utility boat in August; and

a 180-foot liquid mud supply boat in October.

"This will bring our total fleet to 19 — including a crewboat fleet of 11. Our crewboat capability is one of the largest in the Gulf of Mexico," Mr. Schmidt stated.

Offshore Express services clients exclusively in the Gulf of Mexico.

The Lightning Express is the 21st crewboat to be completed and delivered by Progressive Shipbuilders and Fabricators, Inc. which, though a relatively young company in the industry, has become one of the most active crewboat builders on the coast, noted Joe Steverson, Progressive's president. Mr. Steverson attributes his company's growth to "rigorous testing and inspection standards, and the fact we offer a package of extras which we consider standard on all of our 100-foot or more crewboats. One major extra, a result of design, is the 35 percent more open deck cargo capacity, a factor that enables the operator to squeeze all possible profit out of his runs."

The Lightning Express has a 22-foot beam, is 102 feet long, carries 3,000 gallons of fuel and 600 of potable water. Seating capacity is 56 and crew quarters accommodate five, plus captain's stateroom. Cruising speed is 22 knots.

Full instrumentation includes radar, Loran, single-sideband radio, VHF radio, Fathometer, compass, and searchlight.

The main propulsion engines are three GM Detroit Diesel Allison Model 12V71TI. The generator engines are two right hand rotation GM Detroit Diesels Mod-

el 3-71, one air start and one 24V electrical start.

Primary ac power is supplied by two 30-kw generator sets or alternately by shore power. Emergency power for lighting, running lights and VHF radio is supplied by battery.

In addition to the 100-foot-class crewboats, Progressive also builds smaller inland crewboats ranging in size from 48 to 65 feet. These are produced in two models — a deep vee drawing 3½ feet, and a shallow draft capable of operation in 2½ feet of water.

For further information on Progressive Shipbuilding's facilities,

Write 11 on Reader Service Card

Literature Available On Hunt Company's New FuelKleen Filter

The Hunt Company, Houston, Texas, has introduced the new FuelKleen, a unique, dual-stage filter designed to remove foreign particles as small as one micron in size and damaging water from diesel engine fuel.

Designed primarily for EMD (Electro-Motive Division) drilling-rig, stationary and marine power units, the FuelKleen filter is available in kit form for a variety of applications. Its unique feature is a centrifugal inertial separator that removes 100 percent of the water which, if allowed to reach the engine injectors, causes damage and resulting engine downtime.

For more information and literature on the FuelKleen's performance, design and installation,

Write 20 on Reader Service Card

Shell Caprinus® R Oil 40 Meets Requirements Of Auxiliary Engines

Caprinus R Oil 40, Shell's medium viscosity index (MVI) lubricant for medium-speed diesel engines, is now an API CD quality oil for marine diesel engines.

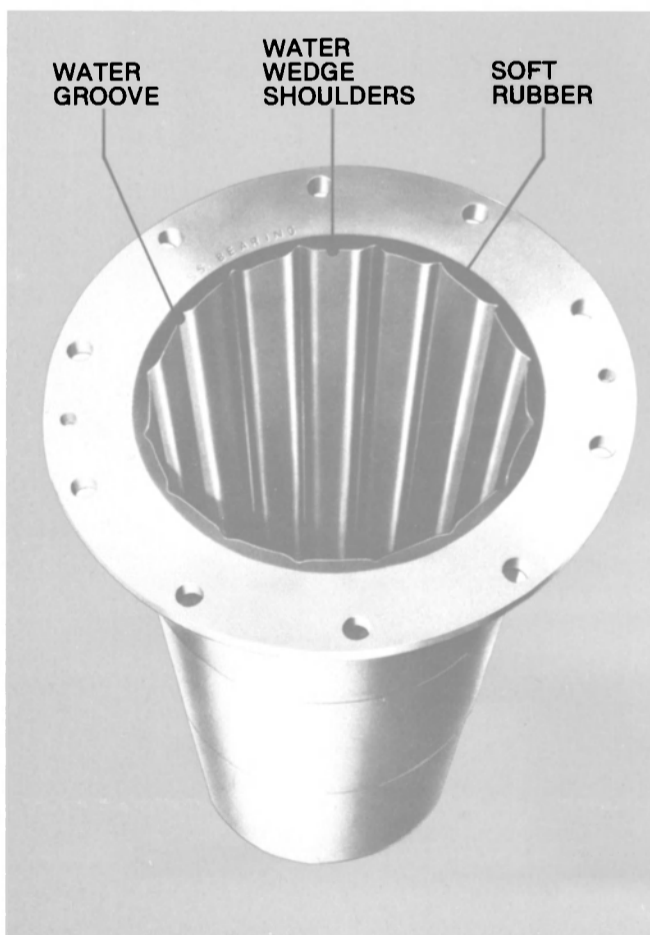
This means Caprinus R Oil 40 meets the performance requirements of Cummins and Caterpillar marine diesels—both frequently used as auxiliary engines aboard shallow-draft vessels.

One-oil purchasing convenience is now possible, thanks to the API CD designation, states a Shell spokesman. It is also believed that chances of mislubrication will be reduced because of the broader field of application of Caprinus R Oil 40.

Caprinus R Oil 40 is a high alkalinity oil, approved as a Superior Class II oil by General Electric Company and recognized as "Satisfactory for General Use" by EMD (Electro-Motive Division of General Motors Corporation).

For complete free literature of Shell Caprinus® R Oil 40,

Write 28 on Reader Service Card



How to get a cold shoulder and like it!

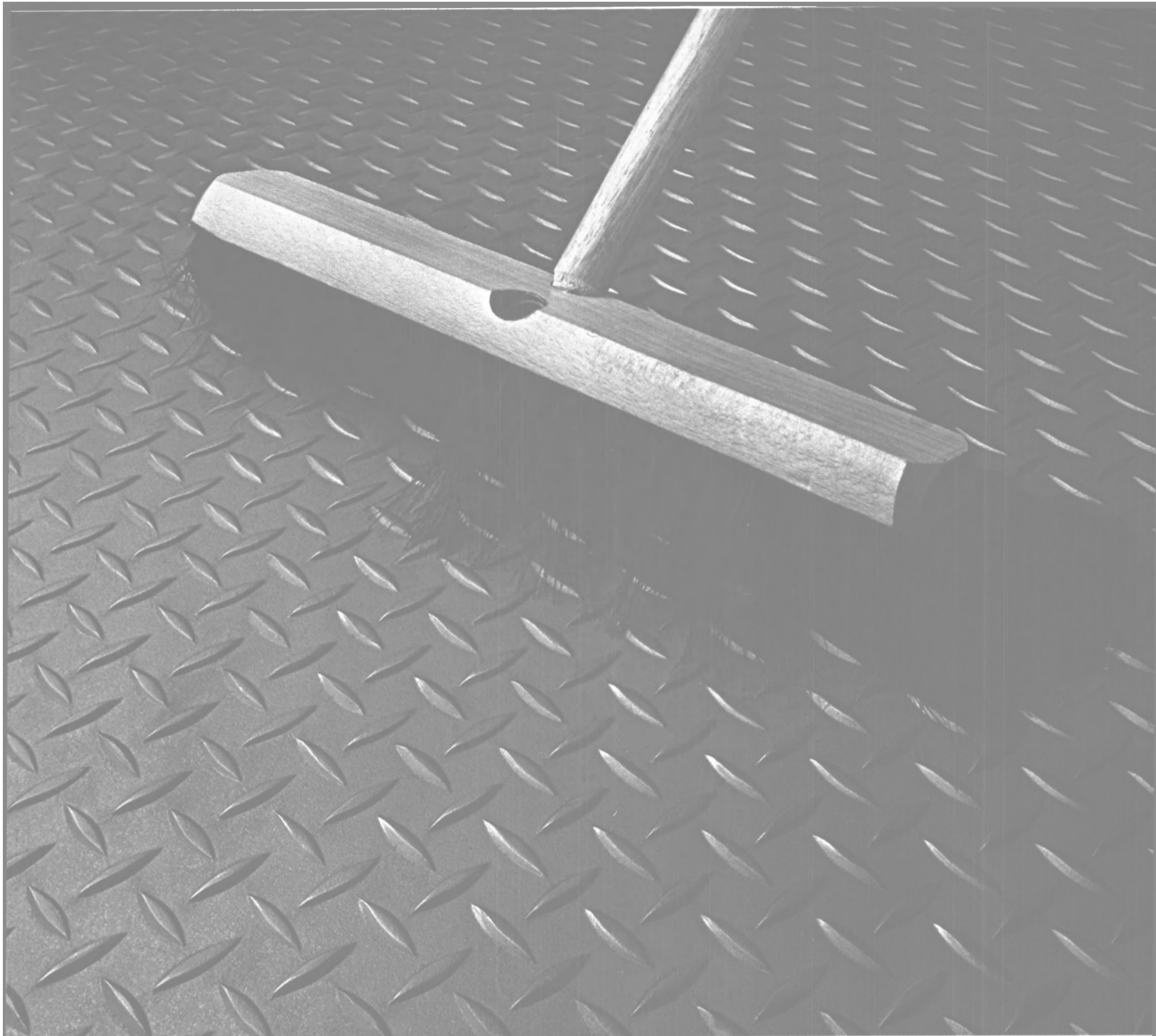
Sometimes a "cold shoulder" can put you at a real disadvantage. With BFGoodrich Cutless® rubber bearings from Lucian Q. Moffitt, you'll get a cold shoulder that you'll like. Here's how.

Thanks to a unique "Water Wedge" design, circulating water is carried over the shoulders of the bearing. The wedge of water, flowing through rounded rubber grooves, forms a lubricating film between the bearing and shaft. This allows heat to dissipate and keeps the bearing shoulders cool even when abrasive materials are present. By eliminating excessive friction and heat, two major causes of bearing failure, the bearing's service life is extended.

Available world-wide through yards and marine stores. Or phone us for same-day shipment from our large inventory of Cutless rubber bearings that give you the cold shoulder you'll like.

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work tables, truck floors, tailgates and kick-plates.

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Another Shiplift Record...

712 FT. VESSEL LIFTED ON 604 FT. SYNCROLIFT



Cargoship Cabo Corrientes (43,600 DWT) on Syncrolift platform, in large photo, waiting to be moved to work berth via transfer system. The bow extends 108' beyond sea end of platform.

Photo above on left shows ships in transfer area/work berths at Tandanor, Buenos Aires, with platform free to service the next vessel. Middle photo is close-up of side transfer rail system on which vessels were moved from Syncrolift to work berths. Photo on right shows 16 vessels in work berths at Astilleros Canarios, S.A., Las Palmas, Canary Islands. Note Syncrolift ready to lift a 17th vessel.

After 22 years, Pearlson is still the only company in the world totally dedicated to the shiplift and transfer system needs of the marine industry.

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Paper On Adaptive Steering Module Available From Sperry

The Sperry Division of Sperry Corporation, Great Neck, N.Y., is offering free literature on its new Adaptive Steering Module (ASM), designed to achieve fuel savings on large commercial ships.

The literature is a reprint of a Sperry paper given to the Society of Naval Architects and Marine Engineers meeting in Montreal, Canada. The paper discusses the development, operation, testing and documented benefits of the Sperry ASM.

The ASM is an electronics package which automatically reduces rudder motion under varying speeds, sea states and load conditions, thereby reducing rudder drag and increasing fuel efficiency. The ASM is used in conjunction with Sperry's Universal Gyropilot, and resulted in fuel savings of up to 2.98 percent, according to the paper.

For a copy of the Sperry paper and more information on the Adaptive Steering Module,

Write 21 on Reader Service Card

\$33-Million Ore Handling Facility Dedicated At Port Of Toledo

The TORCO Dock, the Port of Toledo's (Ohio) new \$33-million iron ore transfer and ground storage facility, was officially dedicated into service recently as the port's exclusive transshipment center for taconite ore pellets.

The new ore handling facility, constructed on the site of the former Lakefront coal and ore docks on Maumee Bay, was designed to specifically handle self-unloading Great Lakes vessels of up to 1,000 feet in length. It is owned by the Toledo Ore Railroad Company, a Chessie System subsidiary, and operated by the Chessie System Railroads, a unit of the CSX Corporation.

Over 150 invited guests, representing government, business and labor, were on hand to hear dedicatory remarks and tour the facility. Highlighting the afternoon dedication ceremony were addresses from top officials representing five organizations that joined in partnership to develop the new ore center.

The speakers included **John A. McWilliam**, president of the Toledo-Lucas County Port Authority, who served as master of ceremonies; **John J. Dwyer**, president of the Oglebay Norton Company, Cleveland; **John T. Collinson**, president and chief executive officer, Chessie System, Cleveland; **Stuart M. Reed**, president and chief operating officer, Consolidated Rail Corporation (Conrail), Philadelphia; and **C. William Verity Jr.**, board chairman, Armco, Inc., Middletown, Ohio.

The ore dock was designed with a system capacity to load railcars

from dockside or from ground storage at a rate of 4,000 tons per hour and have capacity to provide ground storage for 800,000 tons. Railcars and ships will no longer be dependent on each other in transferring ore at the dock. Between five and six million tons of taconite will be shipped through the facility annually.

Armco steel mills, located in Ashland, Ky., Hamilton and Middletown, Ohio, will be the prin-

cipal recipients for the pellets to be transhipped through the TORCO Dock.

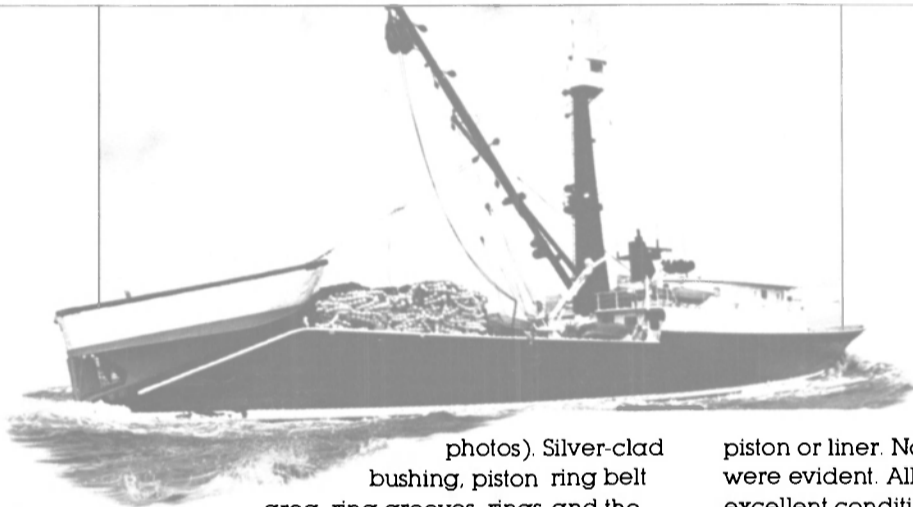
One thousand feet long, the Columbia Star (See MR/EN, June 15, 1981, issue, page 16), the largest vessel in Oglebay Norton's Columbia fleet of lake freighters, will be one of the regular callers at the TORCO Dock. Built specifically for the TORCO trade, she is the first "thousand-footer" ever to call in Toledo.

Gavco To Repair Navy Drydock For \$4.3 Million

Gavco Corporation, Norfolk, Va., is being awarded a \$4,365,883 fixed price contract for repairs to a drydock at the Norfolk Naval Shipyard, Portsmouth, Va., following competition in which six bids were received. The Naval Facilities Engineering Command, Atlantic Division, is the contracting activity. (N62470-80-B-0608)

MVI OILS

Shell's MVI engine oils have helped the MV Gina Anne since early 1974.



Fresh tuna won't wait for downtime

And when the Gina Anne was launched in early 1974 her engines were filled with Shell's MVI Tornus® Oil. Then, in 1978 Captain Manny DeSilva and Chief Engineer Fernando Quaresma changed over to MVI Caprinus® R Oil. Shell's newest and finest-ever MVI lube oil for medium-speed diesels.

At 17,506 hours, the Gina Anne's starboard engine was torn down for routine overhaul. The port engine had 18,175 hours at that time. Both of the EMD 16-645 E7 turbocharged engines were running well and had no major maintenance, but the overhaul was done then for convenience. The Gina Anne travels far and wide for tuna. The waters off Australia, Africa, South America, Japan and the coastal United States are included in her fishing grounds.

Typical of operation with a premium MVI oil, inspections showed that the engines were very clean with low deposit levels, and top decks were essentially free of sludge. Air boxes had light carbonaceous deposits, with the paint clearly visible through the deposits. Crankcases were clean and paint visible.

The #3 starboard power pack was dismantled for inspection (see

photos). Silver-clad bushing, piston ring belt area, ring grooves, rings and the liner and head were examined. The piston was free of lacquer and top ring side clearance was 0.016", very satisfactory at teardown. Ring breakage can occur when side clearance reaches 0.020". Chrome ring ratings were (from top compression down) 2A, 2 and 1, representing low wear for an engine at overhaul time. There was no evidence of scuffing or scoring on

piston or liner. Normal wear patterns were evident. All bearings were in excellent condition. No hard carbon deposits. After almost 18,000 hours, this engine showed the normal wear and outstanding cleanliness typical of an engine on Shell's premium MVI oil. EMD recommends engine overhaul after 16,000 hours.

The top deck photograph of the port engine shows the cleanliness typical of premium MVI oil.

When the Gina Anne is fully loaded, she brings home 1,200 tons of tuna. That's enough edible tuna to make about 14 million tuna sandwiches, if you figure four sandwiches to an average can. And the leftovers would feed over 3 million cats a quarter-pound each, a fair-sized meal.

The far Pacific is no place for a breakdown in any vessel. Particularly if it's full of tuna. MVI Caprinus® R oil helps keep the Gina Anne going strong. Shell Caprinus R is recommended for all major makes of medium-speed diesels, including ALCO, Electro-Motive Division of General Motors, Fairbanks-Morse and General Electric.

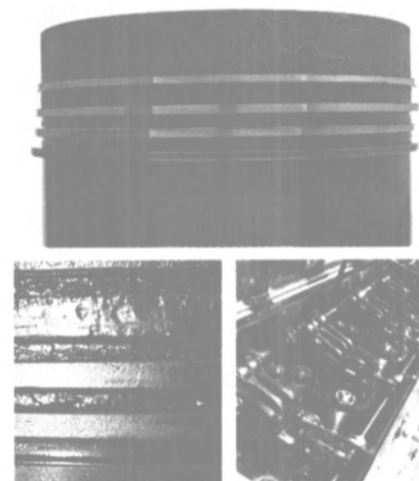
*Tornus and Caprinus are trademarks and are used as such in this writing

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Come to Shell for answers



Ring belt area of the #3 cylinder is free of heavy deposits and all rings are free. Nearly 18,000 hours.

Ring groove fill was only moderate and side clearance for top ring was 0.016". On premium MVI oil.

Top deck is clean with only light wipable sludge after almost 18,000 hours on Shell MVI oils.

Brown & Root Promotes Akin, Sides And Muellner

Brown & Root, Inc., Houston, Texas, a Halliburton Company, has announced the promotion of two new vice presidents, and the addition of another.

Frank A. Akin, formerly manager of Business Development-Marine Services, was promoted to vice president-Business Development, Operations Services.

Curtis M. Sides, formerly gen-

eral manager, Manufacturing & Process Industries Group, has been promoted to vice president-Manufacturing & Process Industries Group.

Frank E. Muellner, formerly vice president and director of engineering for the NUS Corporation, a Brown & Root affiliate, has been employed by the parent company as vice president-Nuclear Engineering, Power Group.

Mr. Akin, a 10-year veteran of Brown & Root, has over 20 years'

experience in various petroleum-related fields. He has served as project manager on jobs around the world, and for the last three years has planned, directed and controlled activities related to sales of marine services and the supervision of Business Development personnel overseas.

Mr. Sides has 17 years' experience with Brown & Root and more than 21 years of diversified experience in the design, planning and management of projects

in petroleum, petrochemical and related industries. A graduate of Southern Methodist University in 1960 with a degree in mechanical engineering, **Mr. Sides** has served in assignments in Spain, the Middle East, North Africa, and South America. He is a registered engineer.

Mr. Muellner comes to Brown & Root with a wide background in nuclear engineering dating back to the Shippingport, Pa., nuclear power plant project in 1956 as mechanical core design engineer. For the past 14 years he has been employed at the NUS Corporation, Rockville, Md., and before that with Westinghouse Electric Corporation, Bettis Atomic Power Laboratory. He is a graduate of the University of Michigan, and completed work on a master's degree at the University of Pittsburgh.

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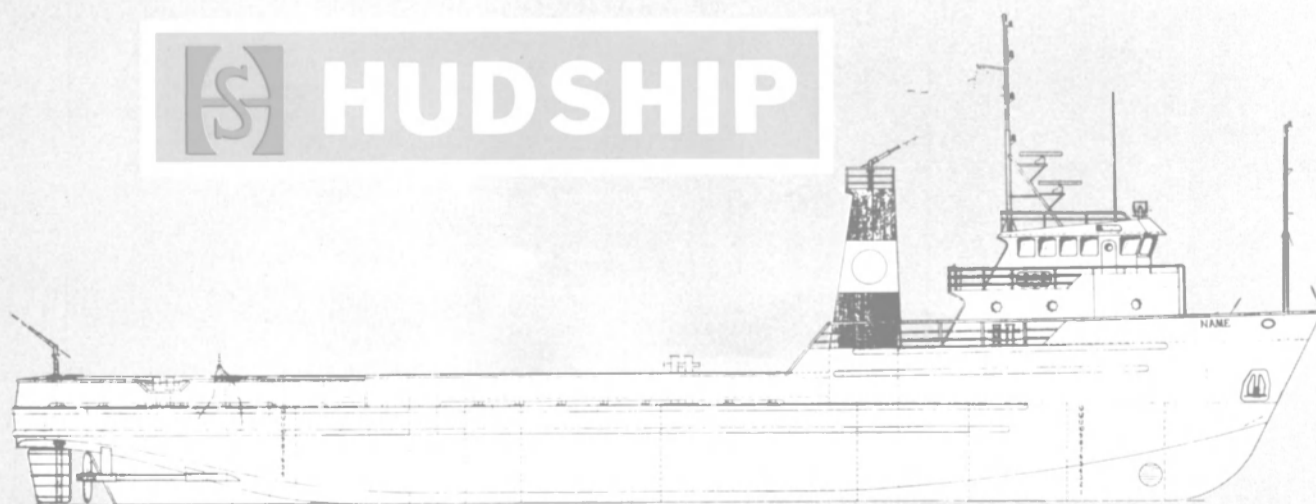
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At our new seventeen acre shipyard we're building larger vessels for our old friends and some new friends too.



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500th Raytheon RAYCAS



Capt. Peter Boele, master, S/S President Hoover, American President Lines, and Capt. John Millard, marketing manager, Commercial Marine Products, Raytheon Marine Company, at console of the 500th Raytheon RAYCAS computer assisted radar collision avoidance system recently installed aboard the S/S President Hoover.

Raytheon Marine Company, Manchester, N.H., manufacturers of a wide range of Marine Electronic Navigation Equipment, has recently installed, in conjunction with Redi-Marine Electronics Co., South San Francisco, the 500th Raytheon RAYCAS aboard the S/S President Hoover, a container ship owned and operated by American President Lines, Inc., Oakland, Calif.

The Raytheon RAYCAS system is a computer assisted radar collision avoidance unit which aids high seas navigators in guiding their vessels safely through congested waters in all weather conditions.

American President Lines, Inc., owns and operates a fleet of 22 U.S.-flag vessels trading between North America and North Asia/South Asia and the Middle East on a regularly scheduled basis, and is installing Raytheon RAYCAS units aboard their vessels.

For further information on Raytheon products,

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INTERNATIONAL SYMPOSIUM ON SHIP OPERATIONS

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Auto Radar Plotting Aids
G.P.S./NavStar
Navigation Capability of InMarsat
InMarsat and its Potential
W.A.R.C., 1982
Steering machinery of the future
Future Maritime Global Safety and Distress System
Hydrography and the Management of the International
Trade Zones
Future Global Maritime Distress and Safety System (IMCO)
Status of Navigational Charts, World-Wide
Computer-Microfilm Charts and Their Impact on the
Mariner
Application of G.P.S. Satellite Receivers on Maritime
Operations
Change-over of World-Wide buoy Systems and Their Impact
at Sea
Current Status of Weather Routing
Heavy weather damage avoidance systems

ECONOMIES AND LOGISTICS OF VESSEL PROCUREMENT (PURCHASING AGENTS VIEWPOINT)

Economies of Propulsion
Fuel Consumption and Bunkers
Inventory Control and Vessel Economics
Problems with obsolete equipment
Problems with Vessel Procurement

SHIP OPERATIONS AND MAINTENANCE

General Purpose Crew Manning
Unmanned Machinery Space Operations
Hull cleaning-Drydock vs afloat
Training: Use of Simulators, Current Status and Future
Trends
On-Board Training
Cargo Loading Simulators - Bulk and Container

COMPLYING WITH NATIONAL AND INTERNATIONAL REGULATORY STANDARDS

The Expanding Role of Port States
Environmental
Crude Oil Washing
Safety

TRAINING AND CERTIFICATION

Role of Simulator in the Training of Tug Personnel
Engine Room Machinery Simulators as training aid
Training needs of off-shore oil industry marine personnel
The role and responsibility of organized maritime labor in
training and education

SHIP OPERATIONS

The Master as a ship manager
Labor's role in shipboard management
Ship management and crew reduction
Economics of Traveling Maintenance crews
Basic Components of today's wheelhouse - economics and
skill demands
General purpose crewing

SHIP PERFORMANCE

Basic elements of energy conservation
Economics of Propulsion
Gear & Turbine vs diesel - economic update
Fuel quality as a factor in ship performance

CARGO PROBLEMS

Cargo damage aboard ship
Cargo insurance

REGULATOR IMPACTS

Import problems

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ASNE San Diego Section Elects New Officers



Newly elected at recent ASNE San Diego Section meeting (left to right): **Otis Cole**, Section secretary-treasurer, Maxwell Labs; **Al Ovrom**, Section vice chairman, Southwest Marine, Inc.; **Dr. Bob Mills**, Section chairman, Solar Turbines; and **Bob Ullman**, outgoing Section chairman, M. Rosenblatt & Son.

The American Society of Naval Engineers, San Diego Section, recently held a meeting at the Officers' Club, U.S. Naval Station, San Diego. The members elected a new slate of officers for the 1980/1981 program. The new officers are: **Dr. Bob Mills**, Section chairman; **Al Ovrom**, Section vice chairman; **Otis Cole**, Section secretary-treasurer, and **Jeff Clough**, Section Programs chairman.

After the election, the members were presented a technical paper entitled "Alternate Fuels for Maritime Use." **Dr. Mills** reviewed both currently available and potential fuels which could be used for maritime gas turbines. The presentation included research and development, worldwide availability, and cost projections.

Port Of Hamburg Completes Tour Of The United States



Pictured at a gathering of New York's shipping industry and government officials recently at a dinner reception held in the "21" Club are **Helmut F.H. Hansen** (right), director of port commerce, Port of Hamburg; **Conrad H.C. Everhard**, president, Dart Orient Services, New York, and the port director's wife, **Carla**.

"Hamburg has the facilities — and the drive — to develop into the most important North Sea/Baltic port for handling United States cargoes," according to **Helmut F.H. Hansen**, executive director of port commerce, Port of Hamburg.

That was the message he delivered during a recent three-week visit to Washington, Boston, New York, and Norfolk. In each city, **Mr. Hansen** and his party met with a variety of industry members in order to familiarize them with the services offered by the port.

Last year, the Port of Hamburg handled approximately 10 million tons of U.S.-originating cargo. Shipments consisted primarily of coal, grain and general cargo, with coal eyed as the growth commodity for 1981. According to **Mr. Hansen**, the port handled

about 2.5 million tons of U.S. coal last year and has the capability to "easily" transship five to six million tons annually.

Noting what he termed "coal fever" in several U.S. ports, he predicted the European market would continue to view U.S. coal as an attractive alternative to OPEC oil.

At luncheons and dinner receptions in each city, **Mr. Hansen**, accompanied by his wife, **Carla**, and **Michael Kutney**, North American marketing manager for the Port of Hamburg, met with officials from trade, commerce, shipping, U.S. ports and governments. The advantages and superior transshipment facilities offered by the port were detailed, and efforts were made to establish commercial partnership with U.S. ports.

First Of 3 Rigs For Danish Firm Completed At Hitachi Zosen

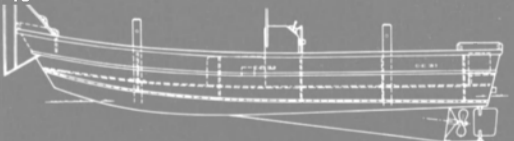


A cantilever-type jackup offshore oil drilling rig, named **Dan King**, was recently completed at the Ariake Works of Hitachi Zosen for **J.L. Offshore Drilling A/S, Denmark**.

Dan King is the first of three identical rigs to be constructed by Hitachi Zosen for the Danish company. A member of the **J. Lauritzen Group** for shipping, **J.L. Offshore Drilling** specializes in offshore oil drilling; with the addition of **Dan King**, the company now has five drilling rigs.

The second rig for **J.L. Offshore Drilling** is scheduled to be completed in October 1981, and the third for **Scout Shipping Co., Inc.**

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(also a member of the J. Lauritzen Group) in January 1982.

The Dan King (shown above) is designed for operation in water depths of up to 62.5 meters (205 feet) and can drill to a maximum depth of 6,096 meters (20,000 feet). It is also designed to permit connection of additional legs that can be extended for operation in waters 90.30 meters (296 feet) deep. The rig ranks among the world's largest of its kind and is capable of operating under severe North Sea weather and sea conditions.

The spud tank is completely retractable within the platform. There is no projection from the bottom to facilitate towing in shallow waters or easy transportation by barge. Hitachi Zosen has incorporated their long experience in both the marine and industrial fields in the original design of this highly advanced rig.

The Dan King's main specifications are: platform (L by B by D) 70 by 76 by 7 meters (230 by 249 by 23 feet); number of legs, three; overall leg length, 104.8 meters (344 feet); complement, 72; and classification, AB.

Geiger Succeeds Zuehlke As President Of Bay Shipbuilding Corp.



Shown at the dinner honoring retiring Bay Shipbuilding president Arthur J. Zuehlke are, left to right: George K. Geiger, president, Arthur J. Zuehlke, and John D. West, president of The Manitowoc Company and CEO, Bay Shipbuilding.

John D. West, president of The Manitowoc Company, Inc., and chief executive officer of Bay Shipbuilding Corp., has announced that George K. Geiger has succeeded Arthur J. Zuehlke as president of Bay Shipbuilding Corp. Bay Shipbuilding Corp., a wholly owned subsidiary of The Manitowoc Company, Inc., is located in Sturgeon Bay, Wis.

Under the direction of Mr. Zuehlke as president, Bay Shipbuilding Corp. has become the largest shipyard on the Great Lakes and one of the most efficient and best-equipped shipyards in the country. Bay Shipbuilding has built 15 self-unloading bulk cargo vessels and converted several others from straight deckers to self-unloaders, laying claim to being the world's leading builder and designer of self-unloading bulk cargo ships. Bay Shipbuilding Corp. has also recently successfully entered the saltwater shipbuilding market, and is presently constructing its fifth vessel for saltwater use.

Mr. Zuehlke started work with Manitowoc Shipbuilding Inc. in 1940 after graduating from the University of Michigan with a degree in naval architecture and marine engineering. He became vice president, manager-Marine Division in 1965, and president of the newly formed Bay Shipbuilding Corp. in 1972.

He is a member of The Society of Naval Architects and Marine Engineers and past chairman of the Great Lakes Section. He is also a member of The Propeller Club, board of visitors of Northwestern Michigan Maritime Academy, and a member of the American Bureau of Shipping.

Although Mr. Zuehlke is retiring after nine busy and productive years as president, he will remain on the board of directors of The Manitowoc Company, Inc.

Mr. Geiger has served as vice president and general manager since May 1980. He has been in the shipbuilding and ship repair business including offshore drilling vessel construction for 31 years in various production and managerial positions. Prior to coming to Bay Shipbuilding Corp., Mr. Geiger was employed since 1970 by Bethlehem Steel Corp.,

in their shipbuilding and repair division. His original assignment was vice president, assistant general manager to organize and staff the Bethlehem yard in the Republic of Singapore. Upon returning to the United States in 1975, he was assigned as assistant to the general manager of the Bethlehem Key Highway Ship Repair Yard, and served in this capacity until joining Bay Shipbuilding Corp.

In 1967, he held the position of president and general manager of Erie Marine, Inc., and established and operated a new shipyard at Erie, Pa., at which the first 1,000-foot Great Lakes self-unloading bulk carrier was built.

Mr. Geiger is a member of the University of California Alumni Association, The Society of Naval Architects and Marine Engineers, and The Propeller Club.

ASTILLEROS UNIDOS DE VERACRUZ, S.A. MEXICO

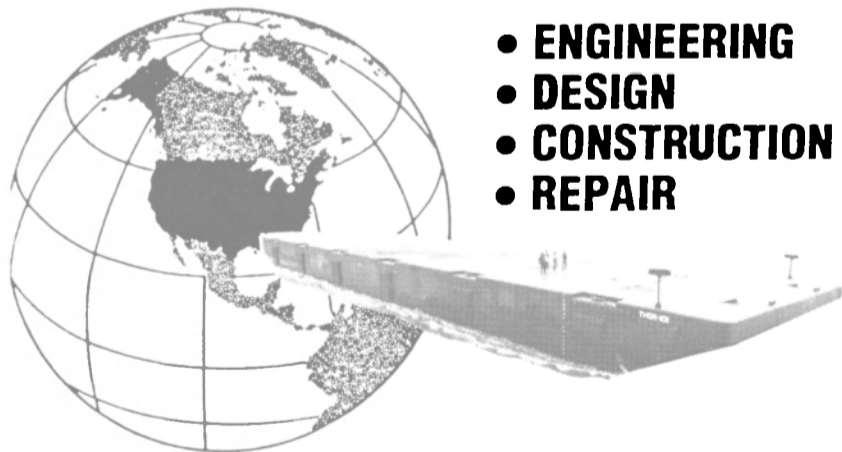
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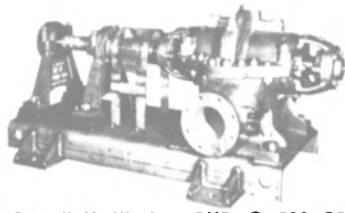
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U.S.N.

Model 10496—3" X 4"—42.6 BHP @ 500 GPM. 3000 RPM—test pressure 175 PSI. Suction flooded. Requires 50 HP 3000 RPM motor. Offer includes Pump, stainless steel base, coupling & extra pedestal for belt drive if desired.

**WORTHINGTON 300 GPM 150 LB HEAD
CENTRIFUGAL FIRE PUMP**

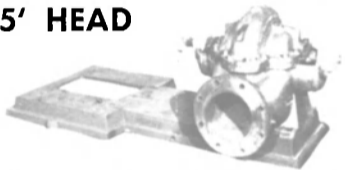
NEW
UNUSED



EX
U.S.N.

#1223620—3550 RPM—5½" suction—4½" discharge—Imp. diam. 10¾"—test pressure 225 lbs. MOTOR: G.E. model 5K1405Y—60 HP—400/60/3—Frame 405—type K—72 amps—3550 RPM.

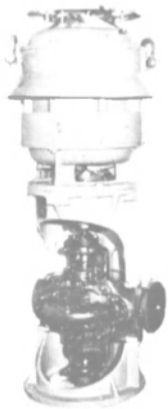
**BRONZE 2000 GPM PUMP
75' HEAD**



75' Head — 1750 RPM — mfg by American Well Works. Horizontally split case size 8X8. (50 HP motor required for pump capacity.) Frame 445. Supplied with 5'8" X 2'5" base.

\$1775 EACH

**250 GPM — 150 LBS
WARREN CENTRIFUGAL
FIRE & BILGE
EDUCTOR PUMP**



NEW
UNUSED

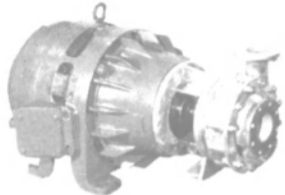
EX-U.S.N.

All Naval bronze. 36.5 BHP—3500 RPM—3" discharge—4" suction. Test pressure 300 lbs. Discharge pressure 150 lbs. Electro Dynamics—Frame FRAC-405—type XNX — #90398 — 45 HP — 3500 RPM 57/5 amps — 45° rise — 440/3/60.

PUMPS

**FAIRBANKS-MORSE
BRONZE FIRE & FLUSHING PUMPS
250 GPM @ 100 LBS.**

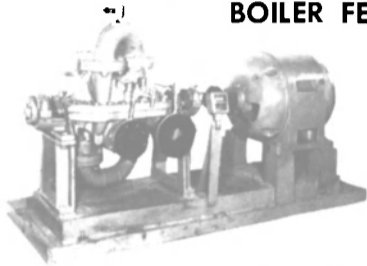
3½"
SUCTION



2½"
DISCHARGE

3500RPM — test pressure 250 lbs. MOTOR: 25 HP — 440/3/60—3500 RPM—34.9 amps—frame 404NC—temp rise 50°C. Ex-DD 445 Class & Fram 695 Class.

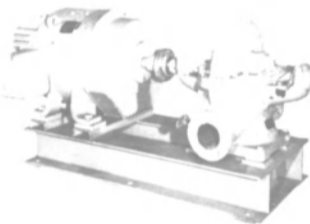
**BUFFALO 100 GPM — 980' HEAD
BOILER FEED PUMP**



Size 2-RR—2-stage. 3" Suction—2" discharge. MOTOR: 50 HP—220/440/3/60—3500 RPM.

**FAIRBANKS-MORSE 750 GPM — 125 PSI
STAINLESS STEEL CENTRIFUGAL SEA
WATER FIRE & FLUSHING PUMP**

NEW
UNUSED

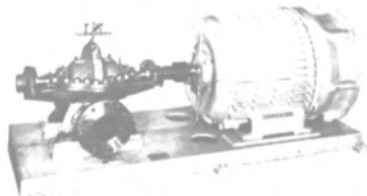


EX
U.S.N.

125 PSI (281 Ft.) total head. Suction lift none (flooded) 1750 RPM. With Folk #8F coupling—flexible, all metal, enclosed. MOTOR: Reliance type T—100 HP—1750 RPM —343 amps—230 volts DC—Frame 503AS. Pump has 5" suction—4" discharge. Pump & Motor mounted on base 37¾" wide X 6' 2¾" long X 3' 0½" high. Total weight 3348 lbs.

**NEW 5" ALL BRONZE BALDWIN-LIMA
1000 GPM 150 PSI TOTAL HEAD
CENTRIFUGAL FIRE PUMP**

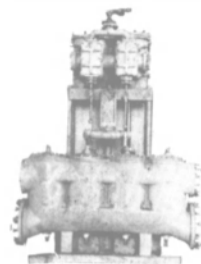
NEW
UNUSED



EX
U.S.N.

Single stage double suction type with 6" side suction & 5" side discharge. 3600 RPM—test pressure 250 PSI. MOTOR: Reliance 125 HP 440/3/60—totally enclosed—fan cooled—Frame D-5003-S—50°C.

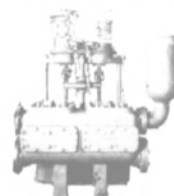
**WORTHINGTON 16" X 14" X 18"
VERTICAL DUPLEX STRIPPING PUMP**



1400 GPM @ 110 PSI — suction lift 11.5 ft. — steam back pressure 15 lbs. 14" Suction — 10" discharge — 2½" steam — 4" exhaust. Overall width 6'8" — overall height 9'1½" — depth 3'9½". Wt. approx. 10,000 lbs.

**RECONDITIONED 1980
ABS — READY TO GO**

**STEAM DRIVEN VERTICAL DUPLEX
FIRE & GENERAL SERVICE PUMPS**

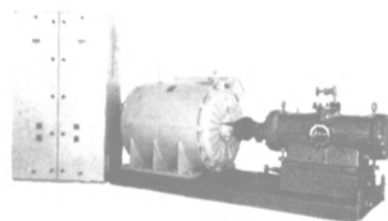


10 X 11 X 12 — Worthington — 560 GPM @ 125# G. 8" Suction — 6" discharge pumps bronze fitted.

**700 G.P.M. @ 150 P.S.I.
NEW — UNUSED — EX-U.S.N.**

**MOTOR DRIVEN ROTARY
HORIZONTAL PUMPS**

WITH 4-SPEED 440/3/60 MOTOR

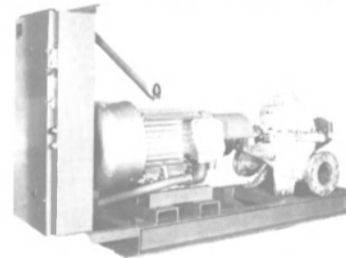


Inlet 8" — outlet 6". Powered by 4-Speed 440/3/60 motor. Motor is 100/75/50/37.5 HP — 1200/900/600/450 R.P.M. Motor has Cutler-Hammer control. Weight 10,000. Inquire for complete details.

FIRE PROTECTION FOR SHIPYARDS!

(Several installed in yards doing Navy work)

**BRONZE FIRE PUMPS
1000 GPM @ 150' HEAD**



6" Suction—5" Discharge. 1750 RPM—motor driven—100 HP—440/3/60/1750. Motor control & pump on pre-fab base for portability. New motor, base and coupling. Gardner-Denver reconditioned pump.

4-BLADE LST BRONZE PROPELLERS

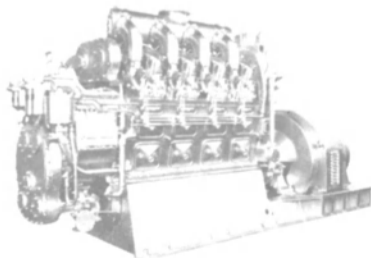
NEW
UNUSED



EX
U.S.N.

Starboard — 7' diameter — pitch constant 4.699: Bore tapers from 6½" to 4¾". 14½" taper equal to 1" / foot on diameter. U.S. Navy reconditioned. Average weight 1760 lbs.

**GM 8-278A 350KW 440/3/60
DIESEL GENERATOR SET**



GM 8-cyl. engine—8½ X 10—2-cycle—Vee type driving 350 KW G.E. generator—440/3/60—600 RPM—430 KW 2 hours. 3 Units available. Your inspection invited.

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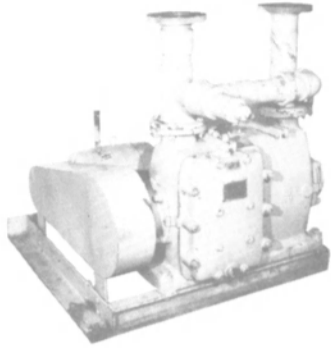


THE BOSTON

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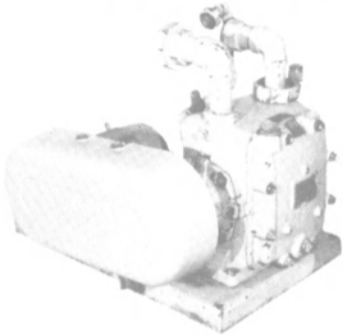
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MEGATOR L-400 4"X4" BILGE & BALLAST PUMP



Sliding shoe—self-priming. 240 GPM — 45 PSI. MOTOR: 15 HP 440/3/60/1750 RPM.

MEGATOR L-125 1 1/2"X1 1/4" FRESH WATER PUMP



Sliding shoe—self-priming. 20 GPM—45 PSI—1 1/2 HP—440/3/60 — 1750 RPM.

OTHER MEGATOR PUMPS

L-150 FOR SANITARY SERVICE

40 GPM — 45 lbs — 1 1/2" X 1 1/2" — 3 HP — 440/3/60 — 1750 RPM. Self-Priming.

H-125 FOR GENERAL SERVICE

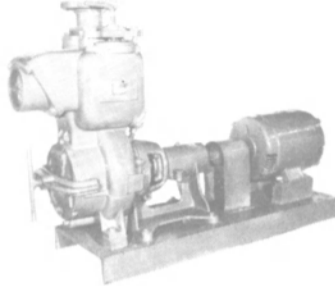
20 GPM — 75 PSI — 1 1/4" X 1 1/4" — 2 HP — 440/3/60. Self-priming.

L-300 FUEL OIL TRANSFER BILGE & BALLAST

120 GPM — 45 PSI — 3" X 3" — 7 1/2 HP — 440/3/60 — 1750 RPM. Self-Priming.

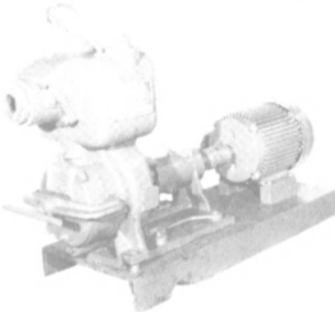
PUMPS

GORMAN RUPP TYPE BILGE SERVICE PUMP



Size 4—70 GPM @ 60 PSI—for raw sewage overboard service. 7 1/2 HP.

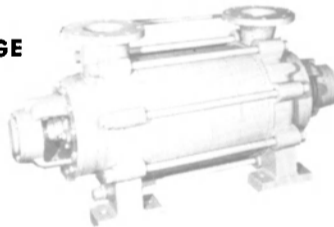
GORMAN RUPP OVERBOARD DISCHARGE TRASH PUMP



Self-priming—50 GPM @ 25 PSI—2" X 1 1/2"—1.5 HP—220/440/3/60—3450 RPM. Model 13A2B.

NEW — UNUSED NIJUIS FIRE PUMP

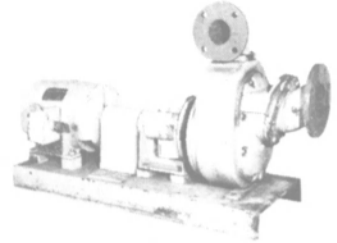
5-STAGE



5" X 3"

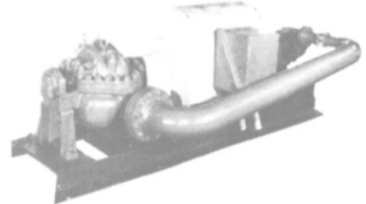
550 GPM @ 323' head @ 1800 RPM

I.T.T. MARLOW EMERGENCY BILGE & BALLAST PUMP



Self-priming—3"X3"—150 GPM @ 150' head. Model 37HEL-15E. RELIANCE MOTOR: 15 HP—440/3/60—3505 RPM.

GOULDS 2-STAGE HIGH PRESSURE WATER INJECTION PUMP



STAGE 1: 235 GPM @ 140' (61 PSI) head discharge to stage 2. STAGE 2: 235 GPM @ 1025' (444 PSI) head discharge pressure — up tangential discharge. Pump in stage 1 Goolds figure 3755; in stage 2 Goolds figure 3316. MOTOR: 200 HP Westinghouse — double shaft — 3550 RPM — 460/60/3.

WITH SPARE MOTOR

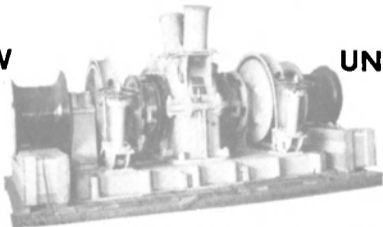
FACTORY NEW NIJUIS 10"X8" SPLIT CASE HORIZONTAL PUMPS



Best efficiency 3400 GPM @ 160 PSI—1500 RPM or 5220 GPM @ 30 PSI—1500 RPM maximum capacity. 4500 GPM @ 125 PSI 1800—RPM. Requires 500 HP. 2000 GPM @ 110 PSI—1450 RPM (using 6-V-71 engine reducing 8" to 6" suction).

LINK BELT WINDLASS

NEW

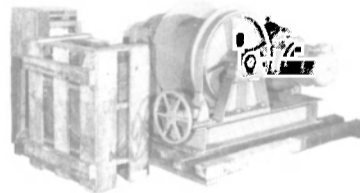


UNUSED

Handles 7000 lb anchors—1 3/8" windlass—56" centers — 50 HP — 230 VDC — with controls and spares.

GENERAL PURPOSE WINCH 3500 LBS AT 200 FPM

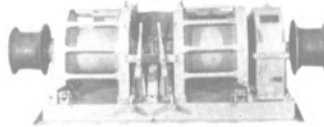
NEW
UNUSED



EX
U.S.N.

A.C. Motor drive—25/12.5 HP—GE 440/3/60—40°C AB —1750 RPM—type KR—full load amps 32. Motor drives winch through Falk reduction gear. Has compressor hand brake.

CARGO WINCH — NEW — UNUSED 2-DRUM 2-GYPSY DECLUTCHABLE

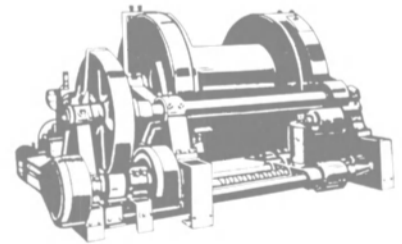


EX
U.S.N.

DUTY: 7400 LBS @ 220 FPM. Mfg by Western Gear Works. With repair parts. Model CWE50. Capacity of each drum 600 ft. of 3/4" wire rope. MOTOR: 50 HP—230 VDC with control. 14" Cutler-Hammer brake control — 1 master switch — enclosed contactor panel & resistors.

LARGE STEAM TOWING ENGINE

9 X 10 TWIN ENGINE DRIVE
Air or Steam — 125/250 PSI



Heavy-duty Clyde with 36" diameter X 51" Face single drum. Flanges 68". CAPACITY: Up to 2800' of 2" wire rope. Normal line pull 40,000 lbs @ 50 FPM. Steam or air pressure required 125 to 250 PSI. Can be adapted to electric drive or increased steam or air pressure to a capacity of 82,000 lbs @ 20 FPM. Pawl holds 270,000 lb. pull from any layer. Equipped with level wind device. Approximate weight 30,000. DIMENSIONS: 12'6" wide—6'6" high. Write for details.

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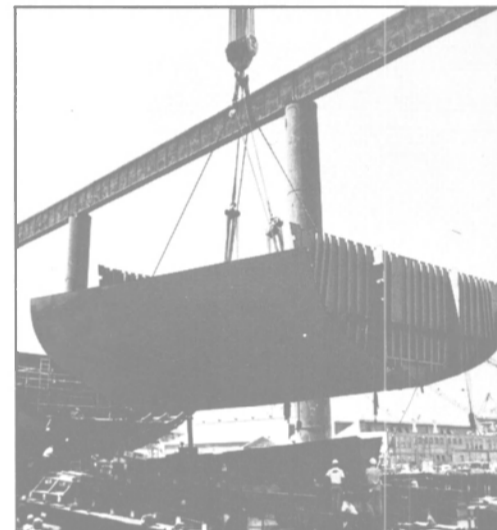
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SHIPBUILDING, BOATBUILDING, DRILL RIG BUILDING, AND REPAIR COMPANIES
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**MARITIME
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AND
ENGINEERING NEWS



Maine Governor Joseph E. Brennan (left), BIW president William E. Haggett (center), and BIW chairman John F. Sullivan Jr. discuss recently announced expansion.

Bath Iron Works Plans New \$46.7-Million Portland Yard

Calling it the largest port development in the state's peacetime history, Maine Governor Joseph Brennan has announced the State of Maine and the City of Portland have signed a memorandum of intent with Bath Iron Works for a \$46.7-million expansion at the Port of Portland.

Bath Iron Works, which has been building both Navy and commercial ships on the banks of the Kennebec River for 97 years, said it would construct a shipbuilding repair and overhaul facility at the Maine State Pier in Portland.

BIW, which has gained an international reputation for building ships ahead of schedule and under budget, will utilize the facility to overhaul Navy and commercial vessels, as well as to complete the outfitting of new vessels constructed and launched 40 miles up the Maine coast in Bath. The drydock at the Portland facility will have a lift capacity of at least 24,000 tons, three times the capacity of its drydock in Bath. The plan states that Bath Iron Works will provide \$16.7 million, of which \$10 million will be used for capital investments and \$6.7 million to finance the shipyard's working capital requirements in the first five years; that the State of Maine will finance \$15 million through General Obligation Bonds; and that the City of Portland will finance \$15 million through General Obligation Bonds. While there is a fixed limit on the obligations of Portland and the State of Maine, Bath Iron Works has agreed to assume responsibility for any cost overruns which may materialize.

"Bath Iron Works believes that the memorandum of intent which we have signed with the State of Maine and the City of Portland

for a major expansion of BIW at the Port of Portland marks the beginning of a new and exciting chapter in Maine's rich shipbuilding history," said John F. Sullivan Jr., BIW's CEO and chairman. "I want to say at the outset that this project in no way represents a move by BIW away from Bath. . . . We view this expansion to the Port of Portland as a unique opportunity to provide for the necessary growth and development of BIW which, in turn, will benefit the state's economy."

Over the past five years, Bath Iron Works Corporation, a Congoleum Company, has experienced consistent expansion of its work load and employment in Bath.

During this period, the shipyard's work force has grown to over 6,500, which is an all-time record post World War II high; its backlog has increased to \$900 million and utilization of the shipyard's facilities has approached full capacity. Most recently, with seven or eight ships in the water at any one time and building ways fully utilized, BIW has been forced to turn aside potential new work which otherwise would have been extremely attractive.

"Bath Iron Works management is very confident that this facility will be successful and create approximately 1,000 new jobs in Portland within five years and added employment in Bath," said William E. Haggett, BIW president.

Presently, Bath-built Guided Missile Frigates for the U.S. Navy are consistently being delivered 17 weeks ahead of their original contract delivery dates. Three containerships built for Matson and Farrell Lines were delivered five, 16, and 16 weeks earlier than their original contract delivery dates. Navy combatant ships overhauled at BIW

are consistently delivered on or ahead of their contract delivery dates.

On its first 11 FFGs, BIW is

underrunning the Navy's target costs in excess of \$5 million per ship and forecasting underruns on subsequent ships in the program.

Charles A. Stewart Jr. Appointed Vice President Of Butterworth Systems



Charles A. Stewart Jr.

Charles A. Stewart Jr. has been appointed vice president and treasurer of the finance department of Butterworth Systems Inc., the international company that manufactures equipment for tank cleaning, underwater hull cleaning, oil/water separation and high-pressure water jetting.

The appointment was announced by Donald Powell, president of Butterworth Systems Inc.

Prior to joining Butterworth Systems, Mr. Stewart completed a special assignment on loan from Exxon Corporation to the office of the Mayor of New York.

Mr. Stewart graduated from

the Wharton School of Finance and Commerce, the University of Pennsylvania, and joined Exxon in 1956.

New Michigan-Jastram Transverse Thruster Brochure Available

Michigan Wheel Corporation's Systems Group has a new brochure on their transverse thruster system. The piece points out the custom design and engineering capabilities of the company which has an exclusive license agreement for marketing in North America and Mexico.

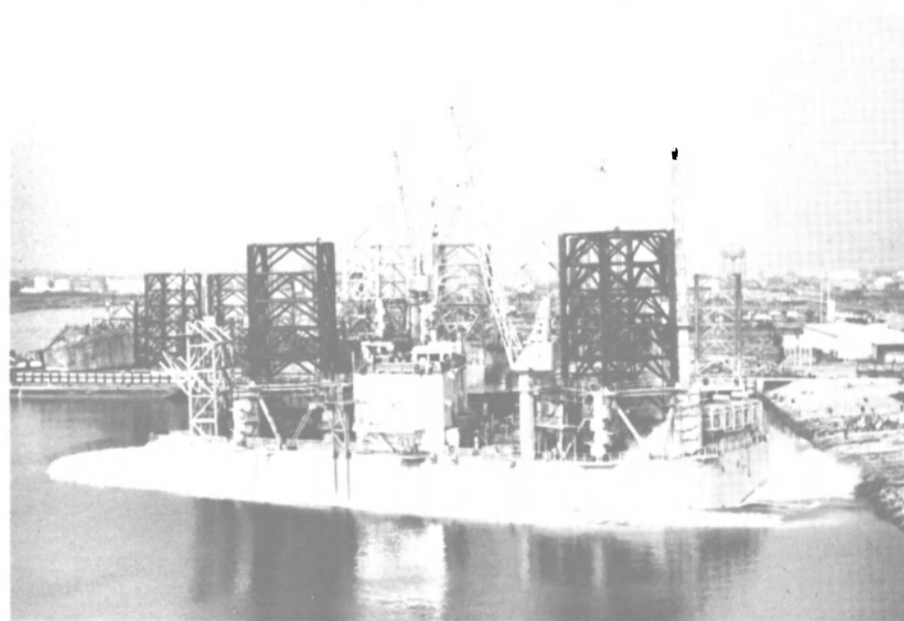
Product application ranges are from 100 hp to 700 hp with input rpms up to 2,100. While custom design engineering is stressed, there is a handy model selector chart included to guide potential users in their model determination planning.

These systems are designed to greatly increase the maneuverability and dynamic stability of vessels under a variety of operating conditions ranging from dockside handling, to offshore rig positioning and river maneuvering.

For a free copy of the new brochure,

Write 18 on Reader Service Card

Glomar Adriatic II Launched At Marathon's Gulf Marine Division



The wave rolling at the bow of Marathon Hull #162 marks the launching of another self-elevating mobile offshore drilling platform from Marathon LeTourneau's Gulf Marine Division rig yard at Brownsville, Texas, recently. The Glomar Adriatic II, a Marathon Class 116-C cantilever jackup drilling platform, will remain at the company's rig yard while the derrick and other drilling package components and the rest of the rig's 410-foot legs are installed.

Marathon Manufacturing Company is the leading manufacturer of mobile offshore jackup drilling platforms and a multi-product company manufacturing materials handling equipment, fabricated steel products, metal buildings, white oils, batteries and consumer goods, and providing civil engineering and construction services. Marathon Manufacturing is a wholly owned subsidiary of The Penn Central Corporation.

Chotin has earned a solid reputation for being able to provide the special knowledge, equipment and expertise to safely barge hazardous liquids—benzene, styrene, caustic soda, vinyl chloride and many others—both inland and offshore.

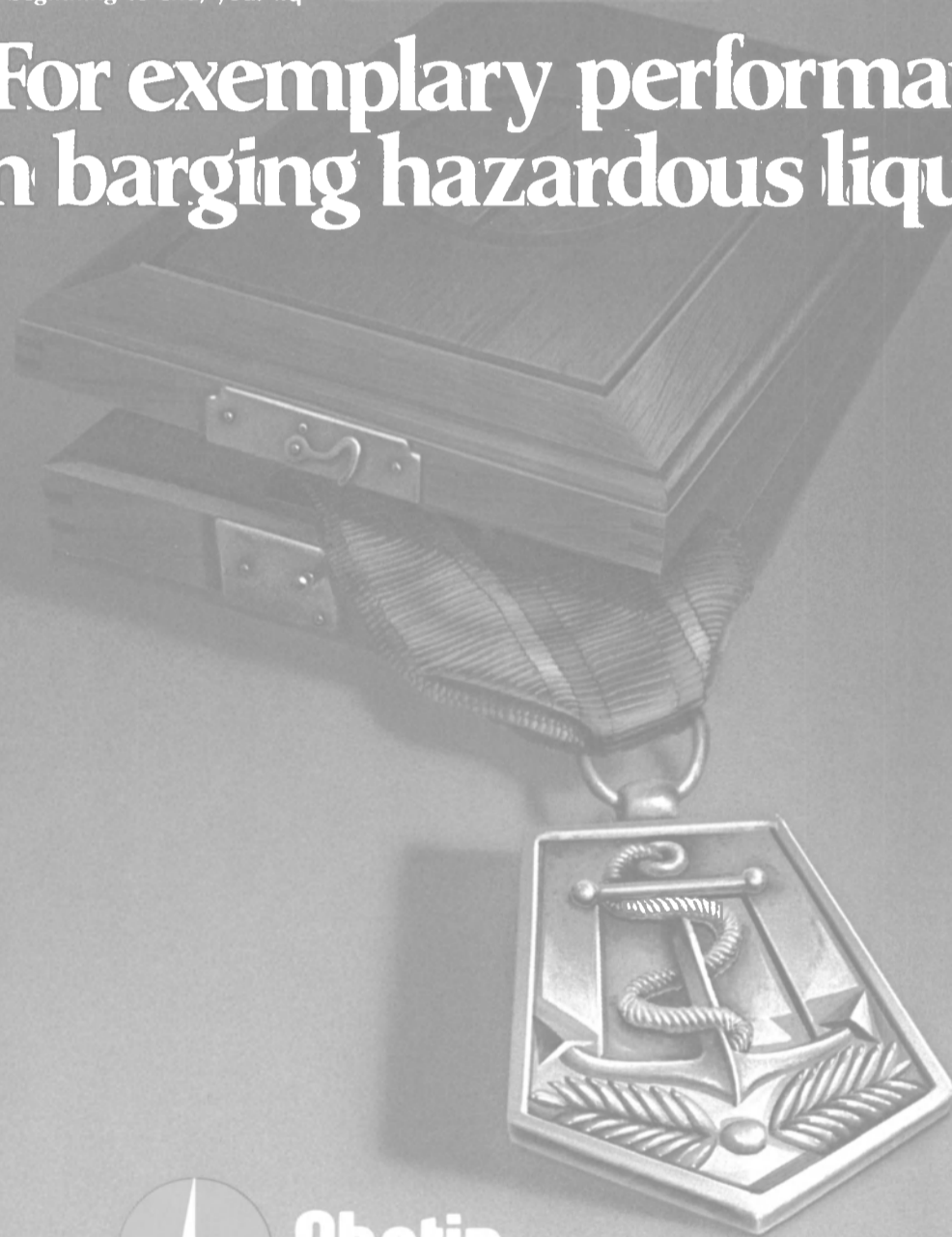
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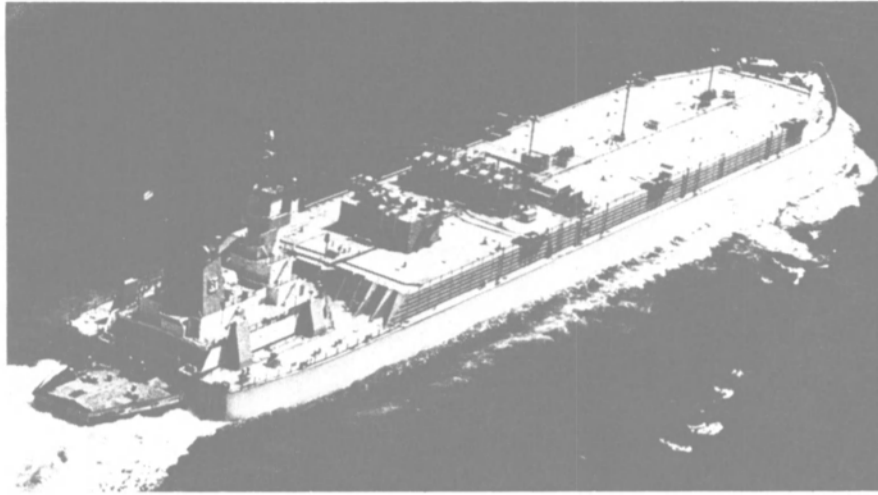
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B&W-powered 15,200-hp Belcher-Port Everglades/Barge #102 seen underway.

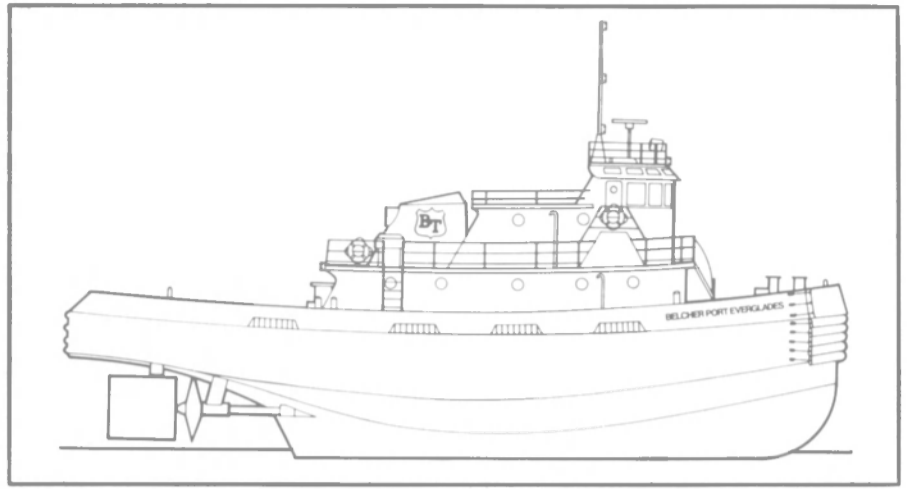
Largest U.S.-Built Tug/Barge Unit Enters Service

Dedication ceremonies for the tugboat "Belcher-Port Everglades" and her mate, Belcher Barge #102, were held recently at Port Everglades (Fla.) Pier Nineteen.

The Belcher-Port Everglades, the largest oceangoing tugboat ever built in this country, was constructed for Belcher Oil Company of Miami by Diamond Manufacturing Company, Savannah, Ga. Belcher Barge #102, built by Galveston Shipbuilding Company of Texas, is also the largest vessel of its type built in the United States.

On hand to officially welcome the tug and barge unit to the port were Florida's Lieutenant Governor Wayne Mixson, Oscar Wyatt Jr., chairman of the board and chief executive officer of The Coastal Corporation, and Ken Johnson, president of Belcher Oil Company, a subsidiary of The Coastal Corporation.

The Belcher-Port Everglades (and her recently launched sister, the Belcher-Tampa) measures 167 feet in length, is 53 feet across the beam and has a 25-foot draft. The tug is propelled by a 15,200-hp turbocharged, slow-speed, di-



Vessel Profile

rect reversing, crosshead engine built by Burmeister and Wain, designated type 7L67GF. The power unit for the tug was custom built in Copenhagen, Denmark, by Burmeister and Wain. The 38-foot tall engine has seven cylinders that produce 15,200 horsepower while turning only 123 revolutions per minute.

"The Belcher-Port Everglades is significant in the American maritime industry," says K.O. Johnson, Belcher president. "She introduces the latest advancements in slow-speed diesel engine technology to American coastal trading."

The Belcher-Port Everglades, in mating with Belcher Barge #102, fits tightly into a 115-foot custom-designed notch at the rear of the barge.

The barge is double-skinned with double bottom tanks throughout and has dedicated ballast. Built to ABS rules, the barge is the largest unmanned barge of its type in the world. Capable of carrying five different products in 10 separate tanks, she has a capacity of 417,000 barrels of oil. Each of the five deepwell pumps is equipped with its own diesel engine drive and is capable of discharging 6,250 bhp. Two ballast pumps, located aft, port and starboard, handle ballast water at 4,000 bhp. The 55,000-ton vessel is 640 feet long, 59 feet tall, and when fully loaded has a draft of 39 feet.

"The barge was designed to increase the delivery capability for petroleum products with considerably increased efficiency," Mr. Johnson added.

Burmeister & Wain Shipyard Delivers The M/S Baumare

Burmeister & Wain Shipyard, Copenhagen, recently delivered Yard No. 883 the M/S Baumare — the third of a series of 17 fuel-saving Panamax bulkcarriers of approximately 64,000 dwt on the yard's order list.

The M/S Baumare was delivered to the shipping company Baumare Inc., Monrovia, Liberia, and will be operated by the Norwegian company Torvald Klaveness A/S.

With an improved hull design and the installation of a low-speed two-stroke B&W 5L80GFCA diesel engine (12,600 bhp at 90 rpm), Burmeister & Wain Shipyard has succeeded in reducing the fuel consumption for this new type of Panamax bulk carrier by 15-20 percent compared with traditional bulk carriers of a similar tonnage. The daily fuel oil consumption is approximately 37 tons with an average speed of 15 knots.

The M/S Baumare was built to Det norske Veritas +1.A.1 class with the following main particulars: length overall, maximum, 225 meters (about 738 feet); breadth, molded (Panamax), 32.24 meters (about 106 feet); depth, molded, 18 meters (59 feet); draft, maximum B-60 freeboard, 13.10 meters (43 feet);

corresponding deadweight, 64,000 tons; total cubic capacity of holds/ (grain), 79,100 cubic meters; cruising range, 21,500 nautical miles; and speed on loaded sea trial, 15.4 knots.

The ship is equipped with seven large almost identical hatches with inclined hatch coamings and McGregor hydraulically operated steel hatch covers.

Holds 1, 3, 5, and 7 can be used to transport ore.

Water ballast is carried in wing tanks, bottom tanks, in fore- and aft-peak and in hold 4. The total water ballast capacity is 30,400 tons.

Accommodations for officers and crew are aft in a five-deck superstructure. Galley provision and cold store office, hospital and hobby room with exercise and film equipment are located on the lowest deck. Accommodations for deck crew, galley personnel and laundry are on boat deck. On the saloon deck, living quarters for officers and crew, mess rooms, accommodations for the steward, pantry and duty mess are located. Accommodations for deck and engine officers are on the officer deck.

The captain and chief engineer

each have a separate suite that includes an office, dayroom, bedroom and bathroom. A special pilot room is also located on this deck.

Wheelhouse, radio station and accommodation for radio officer are situated on the navigation bridge. The ship is equipped with the most up-to-date navigation instruments, including Loran, radio direction finder, radar, satellite navigator autopilot and gyrocompass.

On the bridge, a Loadmaster is installed together with instruments for remote control of the main engine to allow unmanned engine room operations.

The main engine is a five-cylinder long stroke engine, B&W type

L80GFCA with an output of 12,600 bhp at 90 rpm. The auxiliary machinery includes two B&W engines type 5T23LH each attached to a generator of 500 kw and a turbogenerator of 500 kw.

In the engine room on the port side a sound insulated control room is located with control instruments for the machinery.

The steering gear is of the rotary vane type. The B&W type spade rudder is 44 square meters and weighs approximately 90 tons. In accordance with the class requirements, it can be turned from 35 degrees in one side to 30 degrees in the other in 28 seconds.

The anchors are placed on a special seating on the upper deck in the fore end.



The M/S Baumare, recently delivered by B&W Shipyard to Baumare Inc., is powered by a five-cylinder long stroke B&W type L80GFCA engine.

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**Tacoma Boat \$20-Million
Debentures To Finance
Expansion Program**

Tacoma Boatbuilding Co., Tacoma, Wash., announced it is offering \$20 million of 10¾ percent convertible subordinated debentures due 2001 through an underwriting group managed by Bear, Stearns & Co.

The debentures are convertible

into Tacoma Boatbuilding common stock at \$20⅝ per share.

Proceeds from the sale will be used for facility expansion, the repayment of debt, and for working capital purposes. Of this amount, approximately \$8 million will be used to acquire a floating drydock and approximately \$5 million will be used to expand one of the company's shipyards and its machine shop. This facility expansion is intended to permit

the company to construct larger ships and offshore oil drilling rigs, to increase ship repair work capacity, and reduce use of sub-contracted facilities.

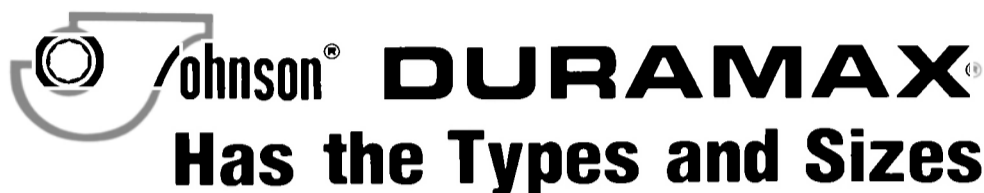
The company is engaged in the design, construction and repair of marine vessels at three shipyards in Tacoma. The company currently is constructing four patrol chasers for a foreign government, four medium endurance cutters for the U.S. Coast Guard,

and 12 ocean surveillance craft for the U.S. Navy.

For the private sector, Tacoma Boat is doing overhauls of the Alaska State ferry Taku and the Washington State ferry Klickitat, is constructing three petroleum barges, and has recently received a contract to build a tuna seiner for a foreign buyer.

The company also designs and constructs offshore supply boats, semisubmersible oil drilling rigs, and large commercial fishing vessels.

When it comes to selecting Stuffing Boxes . . .



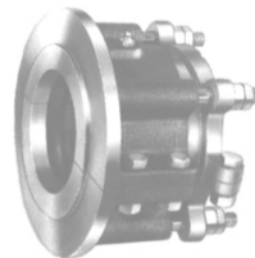
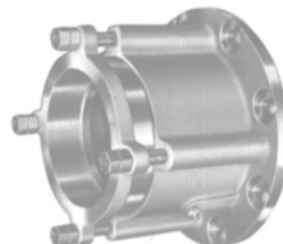
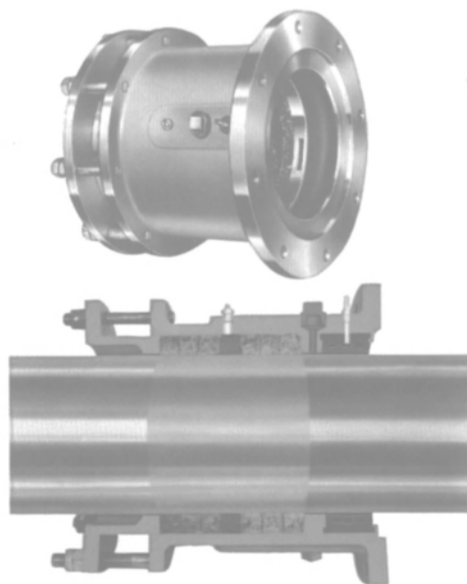
Whatever you need in a stuffing box, whether it's for stern tube, bulkhead or rudder, the Johnson-Duramax line offers a wide choice of styles and sizes. You can select from the popular "Air Seal" type, with built-in inflatable rubber ring that effectively seals out sea water during packing change . . . no need to dry-dock to change packing.

There are "split" styles that offer unique installation and servicing advantages, particularly where space is limited and the convenience of handling large

sizes in "split" style can be an advantage. Stuffing Boxes for bulkhead or rudder application are offered in bronze and can be supplied with steel flange for bulkhead welding. When up-dating of systems may be required to meet water-tight integrity, you will find bulkhead split styles that will fulfill the need—without having to remove shaft. When you want the combined benefits of performance-proven reliability and engineering leadership, Johnson Duramax stuffing boxes offer a wide selection of styles—in a full range of sizes.

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all described in our
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**Write or call
for your copy.**



In the Johnson-Duramax line of Bronze Stuffing Boxes for Forward Stern Tube installations, several styles are offered, including those with the "Air-Seal" inflatable rubber sealing ring. Sizes in a full range for 2-1/2 inch to 15 inch shaft diameters.

The Air Seal types feature an inflatable rubber ring which seals around shaft, making it easy to change packing without dry-docking. Water inlets provided for water lubrication of bearing and grease fittings for lubricating packing. Styles are also

available without "Air Seal" ring.

For shafts of 15-1/8 inch diameter and larger, a Semi-Split style enables handling of large sizes in confined quarters, and simplifies the inspection of inboard end of bearings. Features air seal ring, water

inlet, packing housing.

A full range of Bulkhead and Rudder stuffing boxes is offered in solid and split configurations—in sizes 2-1/2 to 7-3/4 inch. Designed for ease of installation and servicing.

**Newport News Receives
\$74-Million Contract
For Submarine Work**

Newport News Shipbuilding, Newport News, Va., has been awarded a \$74,460,296 modification to a previously awarded cost plus incentive fee contract for alteration, repair, refueling, and testing of the Fleet ballistic missile submarine USS Lewis and Clark (SSBN-644). The Naval Sea Systems Command is the contracting activity.

**John G. Smith Promoted
To General Manager Of
Krupp Atlas Elektronik**

John G. Smith has been promoted to general manager of Krupp Atlas Elektronik U.S.A. For the past year he has served as regional sales manager for the East and Gulf Coasts.



John G. Smith

Krupp Atlas Elektronik is a leading marine electronics manufacturer based in Bremen, West Germany. The Krupp Atlas product line is commercial in nature catering to the merchant marine, fishing, and survey industries.

Prior to joining Krupp Atlas, Mr. Smith was employed by ITT Decca Marine from 1974 until 1980. He held several positions both technical and marketing, the last position being director of marketing services. Prior to this he was employed as a senior sales correspondent with International B.F. Goodrich in New York City.

Mr. Smith has a B.A. degree from St. Peter's College and a master's degree in business administration from Fordham University. He served in the U.S. Army for two years as an armor commander.

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Stephen R. Haskew

Kimble R. Lehman

James Sessions Named President At Newpark — Haskew And Lehman Appointed VPs

James H. Sessions has been named president of Newpark Shipbuilding and Repair, Inc., a shipyard with barge cleaning and gas freeing facilities situated on 22 acres on an island in the Houston Ship Channel.

Newpark also announced the appointments of Stephen R. Haskew

and Kimble R. Lehman as vice presidents of the company.

Mr. Sessions had been executive vice president of Newpark since 1977. He joined Newpark as a vice president in 1976. Previously, Mr. Sessions served in management positions at Todd Shipyards in Houston, and other Gulf area

shipyards. He is a graduate of the Maritime Academy in St. Petersburg, Fla.

Mr. Haskew will be responsible for all repair and new construction activity. He has been employed at Newpark since 1977, serving as manager of marine repair since 1978. Formerly, he was employed by the Shipyard Division, National Marine Services. He is a graduate of Louisiana State University.

Mr. Lehman will continue to be responsible for managing the gas freeing and cleaning plant, and will take on the additional role of marketing director. He has previously served as assistant repair manager and manager of the cleaning and gas freeing plant, and marine chemist for the repair facility. Mr. Lehman is a graduate of Delta State College.

Newpark Shipbuilding and Repair, Inc. is a wholly owned subsidiary of Newpark Resources, Inc. (NYSE).

Deutz Producing Air-Cooled Diesels At Richmond Plant—Free Spec Sheets Offered

In the last 12 months Deutz Corporation has introduced production of air-cooled diesel engines at its Richmond, Ind., plant. Richmond now assembles the F3L 912, F4L 912, F5L 912 (automotive and marine/industrial), and F6L 912 engines.

The precombustion chambered F4L 912W and F6L 912W engines are also being assembled there. Production will soon include the turbocharged in-line, six-cylinder BF6L 913 engine.

The Richmond engine production facility offers North American based original equipment manufacturers excellent availability of Deutz engines from the world's largest manufacturer of air-cooled diesels.

For free specification sheets on Deutz air-cooled diesels,

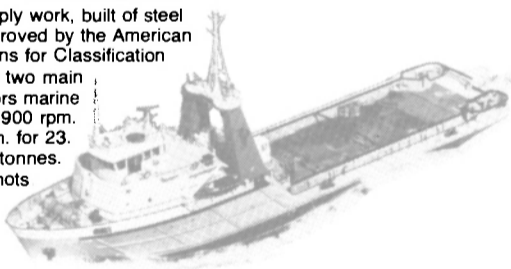
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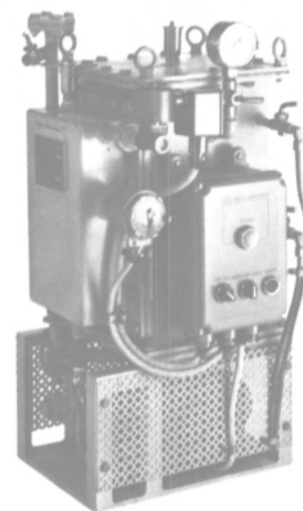


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Dravo Acquires Nilo Barge Line From Olin

Acquisition of the operating assets of Nilo Barge Line from the Olin Corp. by Dravo Corp., Pittsburgh, was announced recently by **Robert Dickey III**, Dravo's chairman and president.

Included in the purchase are 180 dry cargo barges, four tow-boats, a trans-Gulf service, and related supporting assets.

According to **Mr. Dickey**, the cash transaction represents a total investment of more than \$35 million. He added that a package involving lease financing for much of the investment is being arranged with a major leasing firm.

Nilo's operations, **Mr. Dickey** said, will be closely coordinated with those of another Dravo subsidiary, Dravo Mechling Corp., which operates a fleet of 18 tow-boats and 575 barges on the Mis-

issippi-Ohio River system, and is one of the largest U.S. inland waterway carriers.

With headquarters in St. Louis, Nilo was established by Olin in 1963. The company specializes in the movement of bulk commodities which are exempt from Interstate Commerce Commission regulation.

More than one-third of the company's 1980 revenues of \$38 mil-

lion stemmed from the movement of grain.

Nilo operates on the Mississippi, Ohio and Illinois Rivers, as well as in the Gulf of Mexico.

Dravo's total revenue in 1980 amounted to \$1.1 billion, of which about 7 percent resulted from barge operations. Its activities also include engineering, construction, manufacturing and natural resource development.

Late in May, Dravo acquired the Ryan-Walsh group of companies, one of the largest cargo handlers on the Gulf and South Atlantic, in an exchange of stock. Ryan-Walsh's revenues last year amounted to about \$65 million.

Halifax Industries Ltd. Appoints Kenneth Wood As President And CEO



Kenneth Wood

Kenneth Wood has been appointed president and chief executive officer of Halifax Industries Limited of Nova Scotia. He succeeds **William J. Riley**, who is leaving Halifax to become "more involved in offshore and other developmental activities."

Mr. Wood, who has been a director of Halifax Industries since the company was formed in 1978, assumed his new post in August after several years as general manager of fleet services for CN Marine Inc.

Mr. Wood began his career with Green, Silley & Wiers Limited, won a national scholarship, and was transferred to Newcastle-Upon-Tyne, U.K., to study naval architecture and train in shipbuilding.

At 25, he served as chief naval architect with the Hoogley Docking & Engineering Company, Calcutta, India, before joining George T. Davie & Sons of Lauzon, Quebec, as naval architect and assistant general manager. He was later appointed general manager, chief executive officer and member of the board of directors of Davie Shipbuilding Ltd.

He designed and supervised the construction of the Marystown Shipyard on the south coast of Newfoundland and became chief executive officer of the facility before heading the state dockyard of New South Wales in 1968.

In 1972, **Mr. Wood** returned to Canada as managing director of Canadian National's Newfound-

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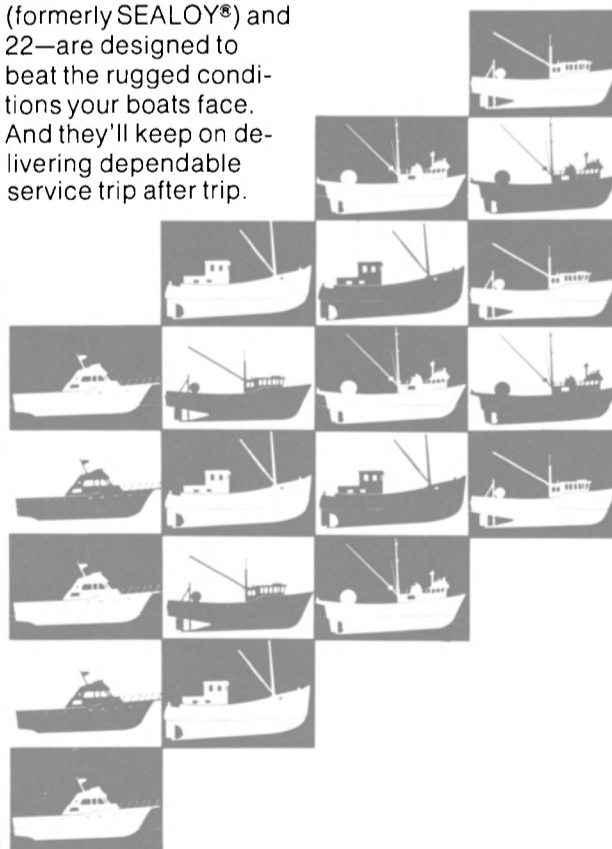
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land dockyard in Saint John's and joined CN's marine group in Moncton in 1975. He played a major role in the design of the new Straitway vessel currently under construction in Saint John. An assistant general manager (technical) of CN Marine, he was responsible for new construction, major capital expenditure, engineering and administration of the company.

Mr. Riley joined Halifax Industries when the company was formed, and was responsible for the company's recent success in ship repair activities as well as implementing the company's 19.5-million Canadian dollar modernization and expansion program.

Newport News Awarded \$8.4-Million Order For Submarine Overhaul

Newport News Shipbuilding, Newport News, Va., is being awarded an \$8,449,200 cost plus fixed fee contract for preparatory overhaul of the fleet ballistic missile submarine USS Francis Scott Key (SSBN-657). The Naval Sea Systems Command is the contracting activity. (N00024-81-C-2063)

Transamerica Delaval Runs Diesel On Liquid Coal —Report Available

A program to test the practicality of operating diesel engines on fuel derived from coal reached a landmark recently with the operation of a Transamerica Delaval test engine on pure coal liquid at full load. Announcement of the test was made by **Clinton S. Mathews**, general manager of the Engine and Compressor Division.

The Department of Energy awarded a \$475,000 grant to Transamerica Delaval, Oakland, Calif., last year to find the best ways to overcome problems involved in burning coal liquid, called SRC-II, in large engines.

In the past, liquids derived from coal such as SRC-II could not be used in larger, medium-speed diesels because their ignition required higher temperatures and pressures than diesel engines could generate. On the cetane scale, which is used to measure fuel ignition properties, conventional diesel oil is rated from 40 to as high as 60, but SRC-II is virtually zero, and can even have a negative number.

Using SRC-II in only one of the test engine's six cylinders to conserve the limited supply of coal liquid formulation available, the program is examining two ways of giving coal liquid the help it needs to burn in diesels. The first test is an engine modification involving a pilot injection system which spurts a small

amount of diesel fuel into the combustion chamber, followed by the mainline introduction of SRC-II. The normal heat of compression in diesels ignites the diesel oil pilot fuel which, in turn, "blow-torches" the coal liquid with enough heat to fire it.

A second method being tested under a variety of conditions is to pre-mix the coal liquid and

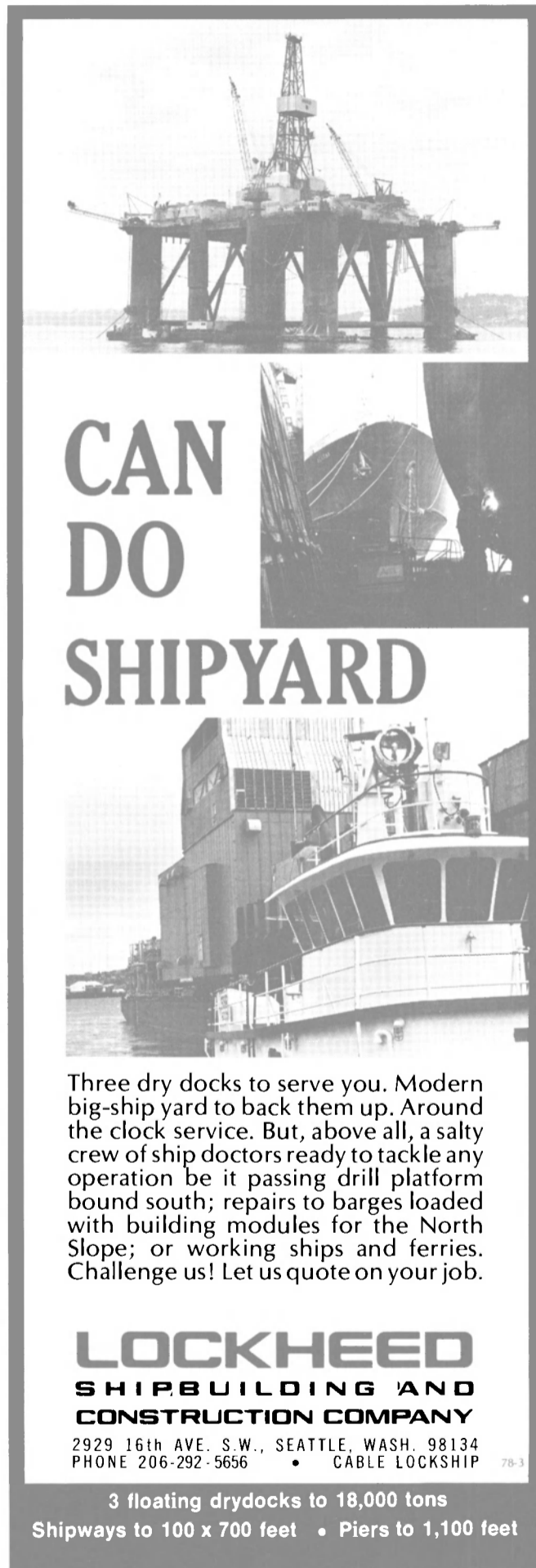
diesel oil, injecting the blend with preheated intake air into the combustion chamber with no modification to the engine. First a blend of 60 percent SRC-II and 40 percent diesel oil was used, running the engine at varying loads. Then, increasing proportions of the SRC-II were used up to 100 percent.

Operating well at all blends,

the engine made history by becoming the first medium-speed diesel to operate on pure coal liquid, at full load.

A full report on the diesel-coal liquid test program is being prepared for publication by Transamerica Delaval and will be available this fall. To reserve your free copy,

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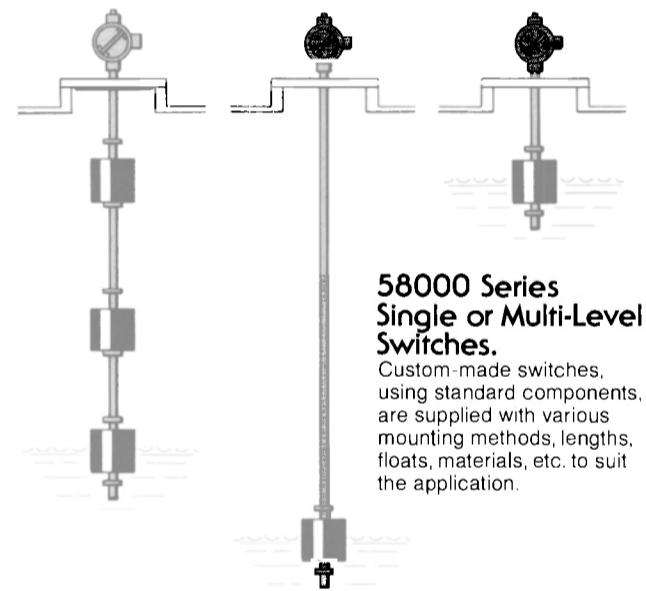
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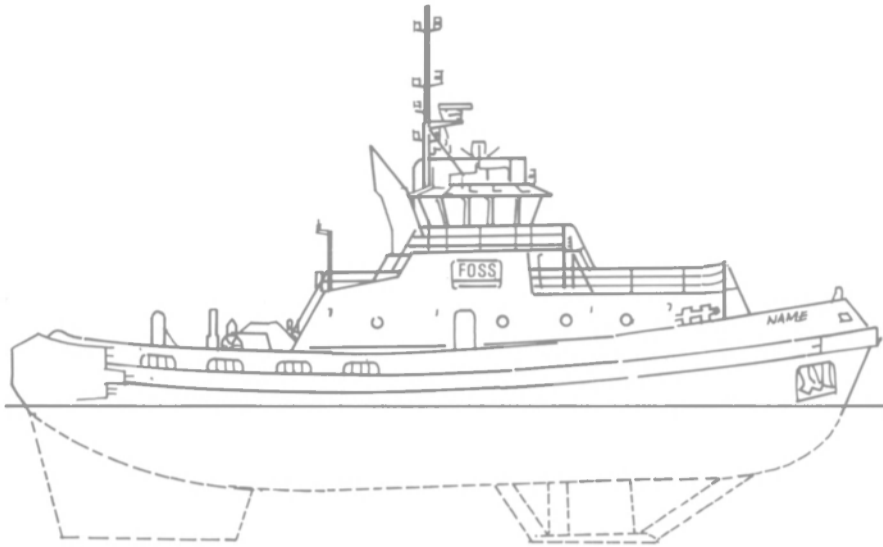


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Transamerica Delaval



Foss To Order New Tugs With Voith Schneider Systems

Foss Launch & Tug Co., Seattle, Wash., announced it has received approval from the Dillingham Corporation, its parent company, to purchase three new, revolutionary Tractor Tugs, with an option for a fourth, as additions to its West Coast fleet. The new tugs will incorporate the Voith Schneider cycloidal propeller system developed in Germany.

Bruce J. Robeson, president of Foss, said in making the announcement: "The Tractor Tug Concept, with the Voith Schneider propulsion system, was selected after an intensive evaluation process in order to satisfy the unique operating requirements of ship assist, harbor shifting and

ship escort on Puget Sound. This system was specifically designed for ship handling work, and the well-tested concept allows the tug operator to apply thrust in any direction and force magnitude through 360 degrees, a decided advantage while assisting and maneuvering large ships."

The cycloidal propeller is a vertically oriented, controllable pitch propulsion system located approximately one-third of the distance aft of the bow. This feature significantly reduces the risk of capsizing the tug during handling operations, permits the tug to get alongside a ship at higher speeds, and enables a tug in a dynamic ship assist situation to ex-

ert forces greater than its bollard pull on the vessel it is assisting.

The new twin-engine Tractor Tugs will be rated at 3,000 hp and 4,000 hp. The two 3,000-hp tugs will have a length of 100 feet, a beam of 36 feet, a draft of 16 feet, and will be powered by two GM-EMD 12-cylinder E-6 diesel engines. The two 4,000-hp tugs will have a length of 160 feet, a beam of 38 feet, a draft of 17 feet, and

will be powered by two GM-EMD 16-cylinder E-6 diesel engines.

The conceptual design of the new Foss Tractor Tugs was developed by **Don Hogue**, manager of administration-Ocean Division, and **Jim Cole**, assistant manager-Foss Shipyard. L.R. Glosten & Associates are the naval architects for the tugs. A builder has yet to be named. Foss expects to take delivery of the tugs in 1982.

Skagit Offers 130-Page Catalog On Full Line Of Offshore Deck Machinery

A ring-bound, hard-cover catalog containing 130 removable pages and data sheets is being offered by the Skagit Corporation.

Skagit Division of Continental Emsco Company, Sedro-Woolley, Wash., specializes in the design, development, and manufacture of a wide variety of heavy-duty equipment to meet the specific needs of its marine/offshore customers.

Over the years, a standard line of equipment has evolved to meet most requirements of drilling and construction vessels. This big ring-bound catalog presents Skagit's standard line of equipment for offshore drilling and construction applications. All models shown have been designed, constructed, and proven. As a result, they may be purchased at a cost substantially lower than units requiring new engineering, tooling, pattern cutting, spare parts documenting, and writing efforts.

However, the Skagit line is flexible. If a customer has requirements over and above the specific

equipment presented in this catalog, Skagit's engineering and marketing staff will work closely with him to help solve specific equipment needs. Skagit's list of offshore customers includes drilling and supply vessel operators worldwide.

The catalog is divided into 12 sections, each giving full technical specifications and applications, and illustrating each unit with schematic drawings, diagrams, and photographs. The machinery described includes: mooring equipment; windlasses, winches, and combination units for drilling vessel mooring systems; winches for construction vessel mooring systems; towing winches; capstans; hoists; fairleads for mooring systems; special application sheaves for mooring systems; jackup winches; and cranes.

Features of Skagit offshore cranes, which meet the requirements of the American Bureau of Shipping and the American Petroleum Institute, include simplicity of operation, serviceability, high line speed, tubular lattice boom, diesel or electric power, piston hydraulics, independent functions, and excellent visibility.

In addition to the Sedro-Woolley headquarters, Skagit maintains offices in Houston and Paris.

For a free copy of this comprehensive catalog,

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Augsburger And Sylvester Promoted At Tenneco

The promotion of **Larry A. Augsburger** to vice president-administration was announced recently by Tenneco Oil Exploration and Production, a major operating unit of Tenneco Inc.

John W. Sylvester Jr. was named to succeed Mr. Augsburger as director of employee relations.

Mr. Augsburger joined Tenneco in 1974 as a senior employee relations administrator. He became manager of employee benefits in 1977 and director of employee relations in 1978. He is a 1963 graduate of Lamar University in Beaumont, Texas, where he received a Bachelor of Business Administration degree in industrial government.

Mr. Sylvester joined Tenneco in 1978 as compensation and benefits manager. He earned a Bachelor of Arts degree in economics from Rice University in 1964 and a Master of Business Administration degree from Stanford University in 1966.



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Translated by John A. Broadwin

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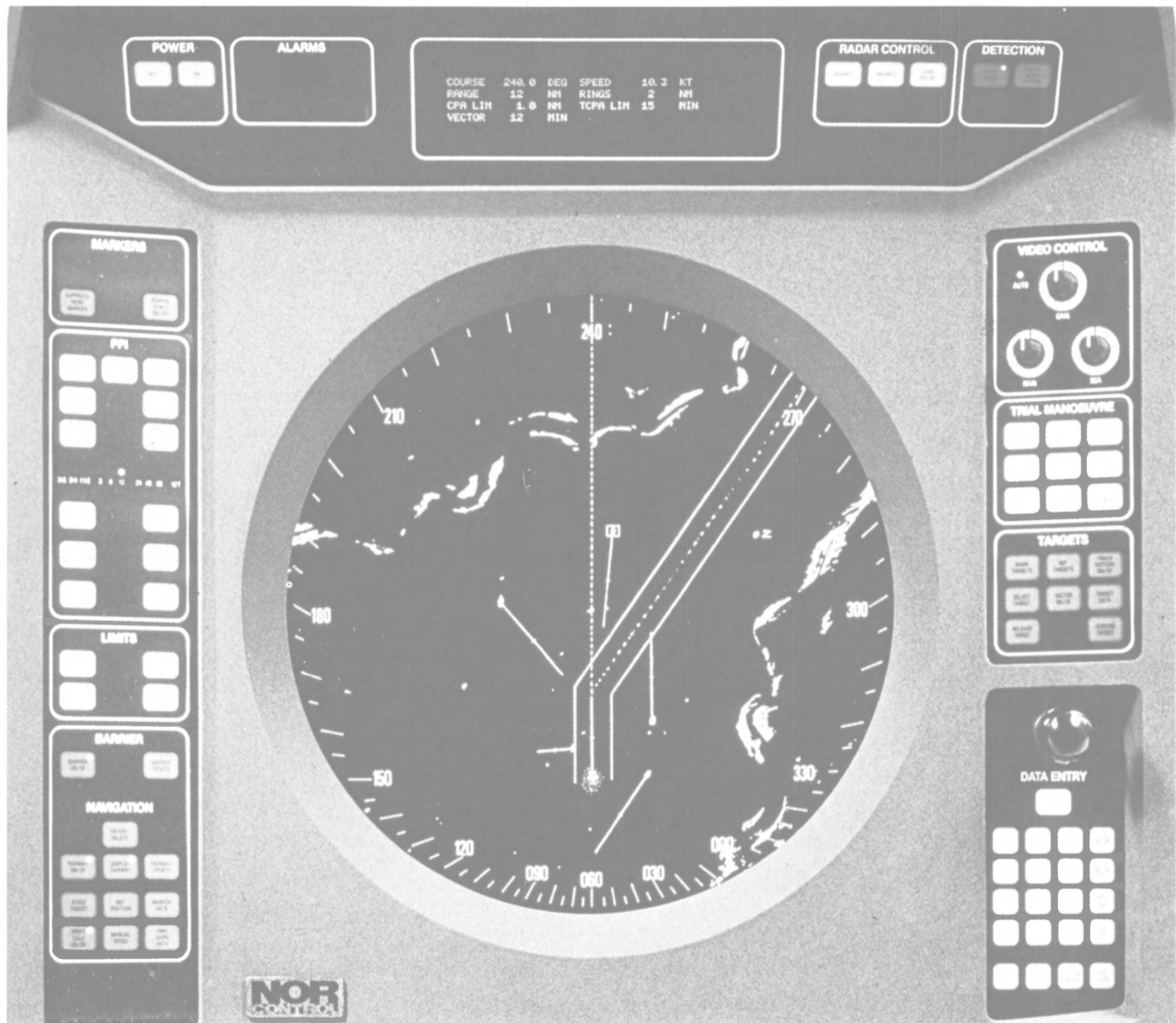
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The Ogden Dynachem, the first of two chemical product carriers currently under construction at Avondale Shipyards, Inc. for Ogden Marine Inc., was christened recently. The 629-foot-long, fuel-efficient vessel will be time-chartered by Diamond Shamrock Corporation's Ocean Systems Department.

M/V Ogden Dynachem Christened At Avondale

Avondale Shipyards, Inc., New Orleans, La., a subsidiary of Ogden Corporation, held christening ceremonies for the M/V Ogden Dynachem, the first of two 42,000-dwt chemical/product carriers currently being built for Ogden Marine, Inc.

Mrs. Doris Bricker, wife of William H. Bricker, chairman and chief executive officer of Diamond Shamrock Corporation, served as sponsor of the Ogden Dynachem.

Principals of the M/V Ogden Dynachem christening ceremony were Albert L. Bossier Jr., president of Avondale Shipyards, Inc., presiding over the ceremony; and William H. Bricker, chairman and chief executive officer of Diamond Shamrock Corporation, delivering the principal address.

Miss April Dawn Chauff, daughter of Mr. and Mrs. Lowell G. Chauff, served as flower girl, a role traditionally filled by the daughter of an Avondale Shipyard's employee. Miss Chauff's father is an electrician specialist at the main plant.

The new ship will cost approximately \$70 million and is the first conventional chemical ship to be built in the United States in over a decade.

Designed for the transportation of caustic soda, Type II and Type III chemical products, and Grade A petroleum products, the M/V Ogden Dynachem will operate in the United States domestic chemical trade, refined oil products trade and Alaskan crude oil trade, serving the Gulf and East Coast ports.

The M/V Ogden Dynachem will be time-chartered by Diamond



Mrs. Doris Bricker, wife of William H. Bricker, chairman and chief executive officer of Diamond Shamrock Corporation, presided over bottle-breaking ceremonies. Shown above, Mrs. Bricker, assisted by Albert L. Bossier Jr., president of Avondale Shipyards, Inc. (at left), cuts the rope which sent the christening bottle to smash against the vessel.

Shamrock Corporation for 15 years with two five-year extension options. Under the contract agreement, Diamond Shamrock Corporation's Ocean Systems Department will handle all commercial arrangements while Ogden Marine, Inc. will own and operate the vessel.

Through Diamond Shamrock's Houston-based Ocean Systems Department, the Ogden Dynachem and a sister vessel will sub-charter tank space to transport products for other companies as well. The Ogden Dynachem more than doubles Diamond Shamrock Ocean System's combined vessel capacity to over 97,000 dead-weight tons and more than doubles cargo capacity to over 1.3 million tons yearly.

Powered by a fuel-efficient, twin-bank Hitachi B&W 2 X

8K45GT slow-speed diesel and having a service speed of 15.5 knots at 12,800 bhp, the Ogden Dynachem is 629 feet long, has a beam of 106 feet, depth of 60 feet and scantling draft of 43.5 feet. The engines turn a single 23.5-foot-diameter four-blade propeller.

Construction of the Ogden Dynachem began in June 1980 at Avondale, which is a subsidiary of the Ogden Corporation.

In addition to a broad range of chemicals, the 629-foot vessel's 18 cargo tanks in 12 segregations allow the Ogden Dynachem to also transport crude oil, refined petroleum products and vegetable and animal oils. The Ogden Dynachem's multiproduct cargo system and ship configuration were designed for transportation of 50 percent solution caustic soda, Grade A petroleum products and Type II and III chemicals having specific gravities up to 1.62.

The tanker will be among the safest at sea, fitted with many advanced design features and built to meet or exceed the latest USCG and IMCO requirements for bulk carriers of hazardous materials.

The Ogden Dynachem incorporates state-of-the-art technology including electronic gaging and control systems, inorganic zinc-coated and hi-build epoxy-coated tanks to assure cargo integrity, an independently generated combustion-preventive inert gas system in the cargo tanks and fully segregated cargo handling and control systems.

A full double bottom and the size and number of cargo segregations provide for full compliance with pollution prevention regulations for outflow, tank length and tank volumes as well as provide defensively positioned,

segregated discharge ballast. The cargo tank area is further protected by an alcohol-based polar solvent foam system, intrinsically safe electric equipment, automatic high-level shutdown filling valves and stringent material restrictions.

The vessel's fuel-efficient, closed-loop control inert gas generator is a low velocity displacement system with a common distribution header and check valve isolation into each cargo segregation. Independent high-level alarms afford additional overfill protection.

A Frank Mohn submerged, hydraulic pumping system with individual cargo pump per tank allows segregated handling of chemical and petroleum products of a wide range of specific gravities, vapor pressures and viscosities.

An electronic cargo control system integrates into a single remote cargo control panel the central hydraulic system operation, cargo pump control, hydraulic valve actuation, cargo tank level gaging, tank temperature monitors, inert gas control system, ballast system operation and gaging and emergency shutdown system.

In his review of a paper detailing the Ogden Dynachem's design presented to The Society of Naval Architects and Marine Engineers by the ship's naval architects, USCG Comdr. D.F. Bobeck said: "To say that the vessel's design is unique and worthy of special consideration is surely an understatement. To design a vessel to meet only the owner's requirements would test the mettle of most naval architects and marine engineers. To design a vessel to also incorporate many novel features and meet the new regulations promulgated by the Coast Guard



Principal participants of the Ogden Dynachem christening were, from left to right: Allan J. Tomlinson, president and chief operating officer, Diamond Shamrock Corporation; Ralph E. Ablon, chairman of the board and president of Ogden Corporation; William H. Bricker, chairman and chief executive officer of Diamond Shamrock Corporation; Mrs. Doris Bricker, sponsor of the Ogden Dynachem; Albert L. Bossier Jr., president and chief operating officer of Avondale Shipyards, Inc., a subsidiary of Ogden Corporation; M. Lee Rice, president and chief executive officer of Ogden Transportation Corporation, a subsidiary of Ogden Corporation; Marlyn Milberg, vice president, technology of Diamond Shamrock Corporation; Michael Klebanoff, president and chief executive officer of Ogden Marine, Inc., a subsidiary of Ogden Corporation.

is indeed a noteworthy achievement."

Commander Bobeck also noted the Ogden Dynachem includes design features not presently required by the Coast Guard but likely to be instituted in the future.

Accommodations for a complement of 36 are provided in the single tower, which also includes lounges, a gymnasium, conference room, ship's office, dining room

and other facilities. Each of the regular 24 crew members is housed in an individual stateroom having private toilet and shower. A six-man dormitory is available for technical support personnel making intermittent voyages.

The Ogden Dynachem is classified as an American Bureau of Shipping Maltese Cross A-1 E Chemical Carrier; Oil Carrier; and Maltese Cross AMS, Maltese Cross ACC.

M/V Ogden Dynachem

| | |
|--------------------------|-------------------------------|
| Main Engine | Hitachi B&W 2 X 8K45GT Diesel |
| Reduction Gear | Hitachi |
| Steering Gear | Propulsion Systems |
| Inert Gas Generator | Moss Rosenberg |
| Auxiliary Boiler | Foster Wheeler Boiler Corp. |
| Cargo Control System | Paul Monroe Hydraulics, Inc. |
| Cargo Valves | Dover/Norris |
| Pumps | IMO Pump Div. |
| Pumps | Frank Mohn |
| Pumps | Worthington |
| Electronic Gaging System | SAAB |
| Manifold Valves | Crane |
| High-Level Tank Alarms | MMC |
| Navigation Equipment | Raytheon |
| Foam System | National Foam |
| Sewage System | St. Louis Ship F.A.S.T. |
| Air-Conditioning Plant | York |
| Distilling Plant | DeLaval Separator |
| Purifiers | DeLaval Separator |

TRW Receives \$15-Million Amphibian Contract

TRW Inc., Washington Operations, McLean, Va., has been awarded a \$15,282,719 modification to a previously awarded cost plus award fee contract for technical and engineering support to the Amphibious Ship Acquisition Project. The Naval Sea Systems Command is the contracting activity.

Bath Iron Awarded \$4.9-Million For PSA Work On 4 FFG7-Class Ships

Chairman and chief executive officer John F. Sullivan Jr. of Bath (Maine) Iron Works announced recently the shipyard has been awarded a contract for \$4.9 million for additional work on four FFG7-class guided missile frigates (FFG-20, 22, 28 and 31) built by Todd Shipyards on the West Coast, but scheduled to be homeported on the East Coast.

The initial contract price covers all work to be done on the

FFG-20 and advance planning, design work and material procurement for the remaining three ships.

The Post Shakedown Availability (PSA) work includes modification of combat systems, installation of improved early warning systems, habitability modifications and the updating of the other ships' systems.

The USS Antrim, FFG-20, is expected to arrive at Bath on May 7, 1982 for a 14-week PSA period.

\$300-Million Navy Award For Indian Ocean Base

Raymond, Brown and Root, Mowlem, Houston, Texas, have been awarded a \$300,000,000 cost plus award fee contract for the construction of Navy and Air Force facilities at the Naval Support Facility, Diego Garcia, British Indian Ocean Territories. The Naval Facilities Engineering Command, Pacific Division, is the contracting activity.

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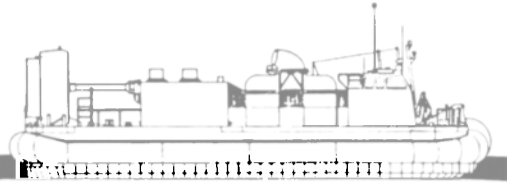
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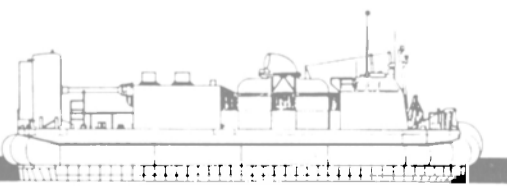
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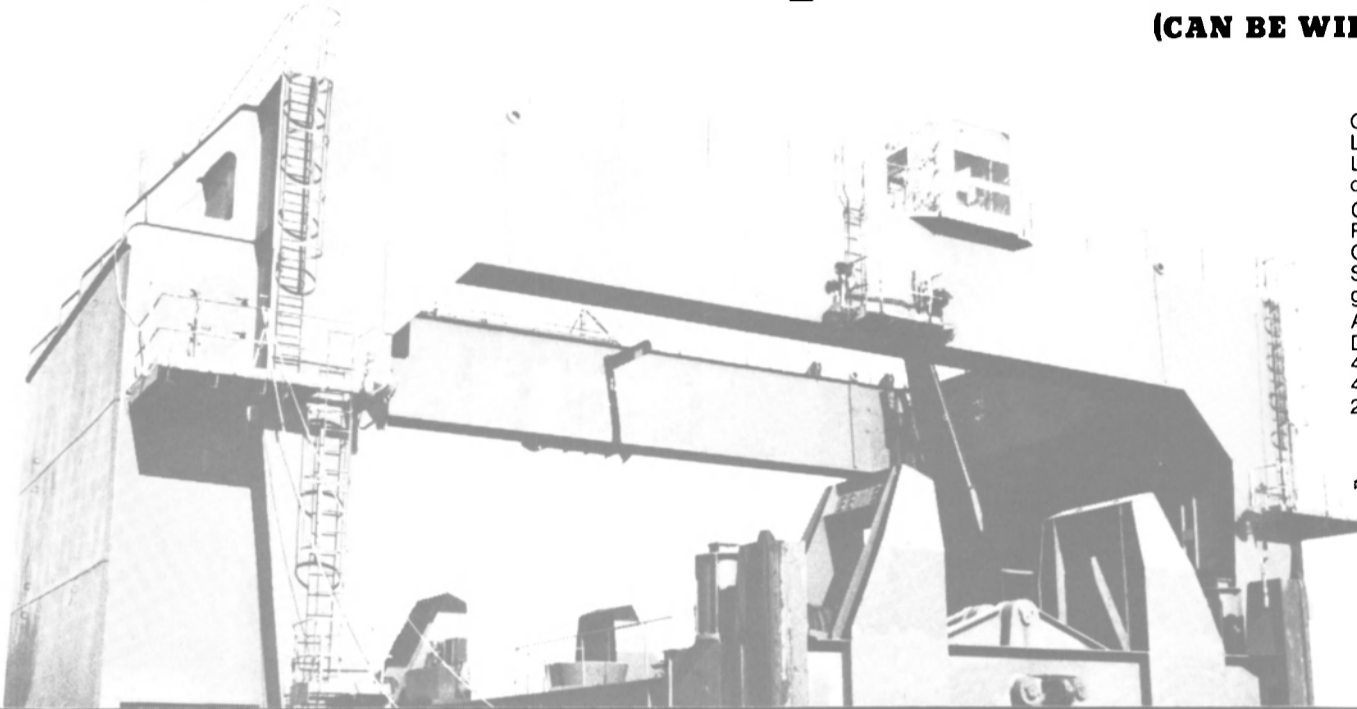
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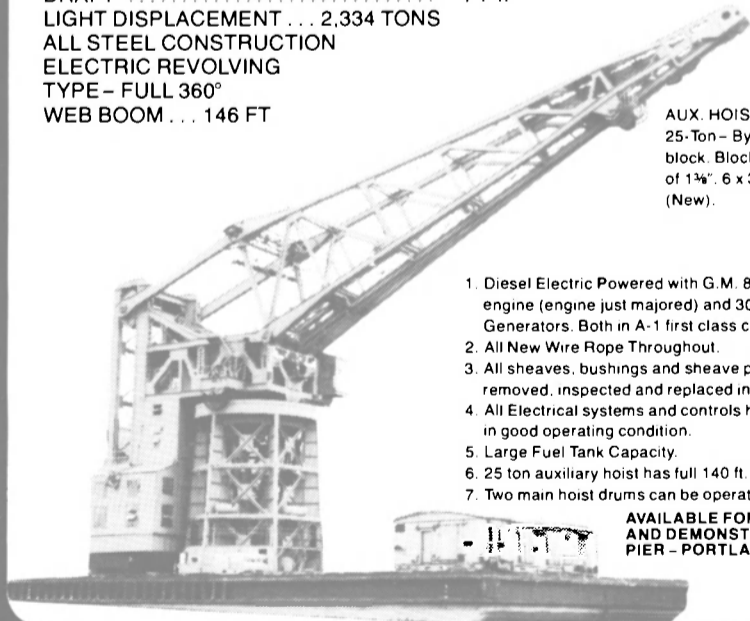
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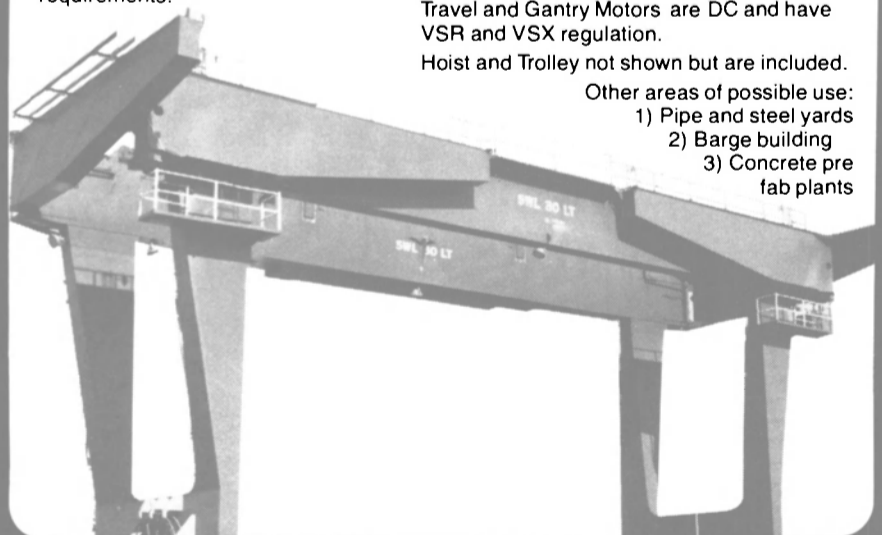
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Sq. Raked Stern 80' length

DECK CARGO

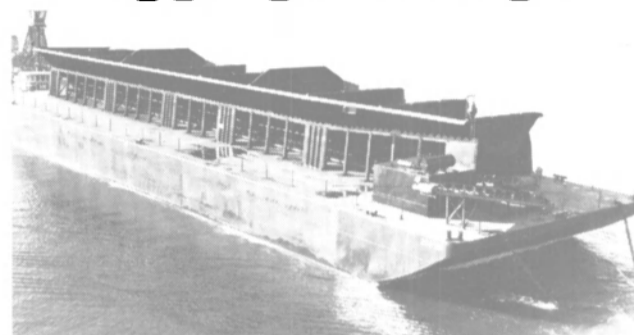
Open Deck Area 37,886 S.F.
Deck Load 1,500 P.S.F.
D.W.T. 18,500 L.T.

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Oil Cargo 150,000 BBL's
..... 21,000 L.T.
Cargo Piping 14' Mains
..... 10" Suctions

AVAILABLE DECEMBER 14, 1981

Self Unloading Aggregate Barge



ZAG-501

Length (O.A.) 248'-0"
Beam 63'-0"
Depth 16'-0"
Displacement Light 1010 S.T.
Draft Light (F.W.) 2'-7 1/2"
Draft Loaded (F.W.) 11'-8"
DWT 4000 S.T.
Diesel Electric Set 100 KW
Hopper Volume 2667 cu. yd.

Hopper Unloading Gates: 27-36" x 36" Horiz. sliding gates
w/individual hydr. controls.

Main Unloading Conveyor: 48" wide belt, 30 H.P. elect. motor, 250
ft./min. Max. disch. rate — 667 cu. yd./hr.

Transfer Conveyor: 42" wide belt, 10 H.P. elect. motor, 350 ft./min.
off loading location — Stbd. side fwd. at 9 ft. above deck.

Hull Plating: Deck, side shell & bott. 9/16"

Split Type Self Dumping Scows

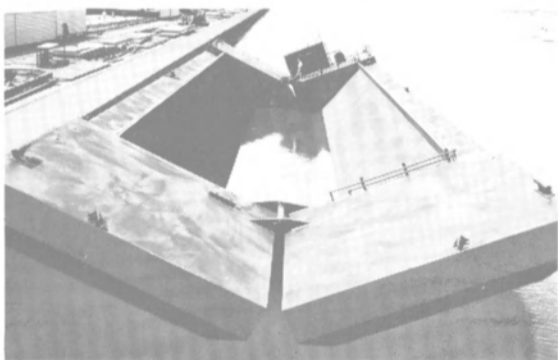
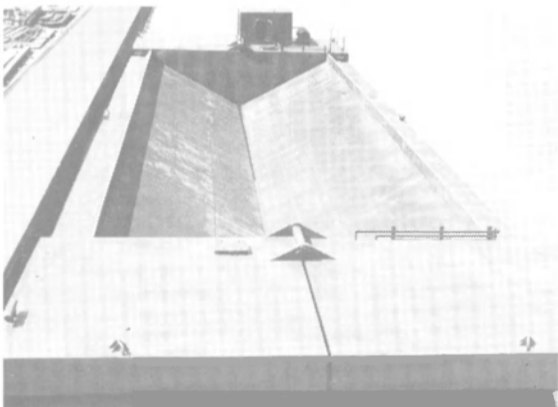
Built 1979. For sale, long
or short term charters

SPECIFICATIONS

ABS loadlined for USCG-approved
offport dumping

Length (ML'D) 180'-0"
Beam (ML'D) 50'-0"
Depth of Mid-Body (ML'D) 14'-0"
Hopper Length (ML'D) 128'-0"
Level Hopper Volume 1421 cu. yd.
DWT @ d = 10.22 ft. 1615 L.T.
Rake Lengths F. & A. 26'-0"
Twin Skegs
Stern & Fwd. Rake Decks Stepped up 2'-0"
Engine GM 671
Hydraulic Pumps (2) 12 GPM & 75 GPM
Time To Open (Fully Closed to Fully Open)
..... 6 Min. 5 Sec.
Time To Close 4 Min. 34 Sec.
Hopper Angle Fully Open 53.78°
Fuel Tank Capacity 445 Gal.
Hydraulic Cylinders (2 Fwd. & 2 Aft)
..... 18" Diam. 120' Stroke

Plating
Side 9/16"
Bottom 5/8"
Hopper 5/8"



American Crane Barge

BARGE DATA

Displacement Light 1,200T.
Gross Tonnage 911
Net Tonnage 911
Length 151'-6"
Beam 60'-0"
Hull Depth 12'-0"
Flush Deck Area 6,000 Sq. Ft.
Engine Room Area 412 Sq. Ft.
Office & Eating Area 136 Sq. Ft.
Diesel Fuel Tanks 36,000 Gal.
Fresh Water Tanks 36,000 Gal.
Bunker "C" Fuel Tanks 12,000 Gal.
Ballast System None

CRANE DATA

Manufacturer American Hoist & Derrick Co.
Model & Type 305 Revolver
Capacity 125 T.
Boom (Certified rating with 140' length, 160' available)
20 part rigging 2,200 ft., 7/8" C — 6 x 36 I.P.S.
4 part standing standing bail 2-186 ft., 1 3/4" C — 6 x 36 I.P.S.
Main Hoist (Certified rating: 58.5 T. @ 50' to 100'; 8 part. rigg.)
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2 part rigging 635 ft., 7/8" C — 6 x 66 I.P.S.

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National Watts: 1-(800)-327-2495

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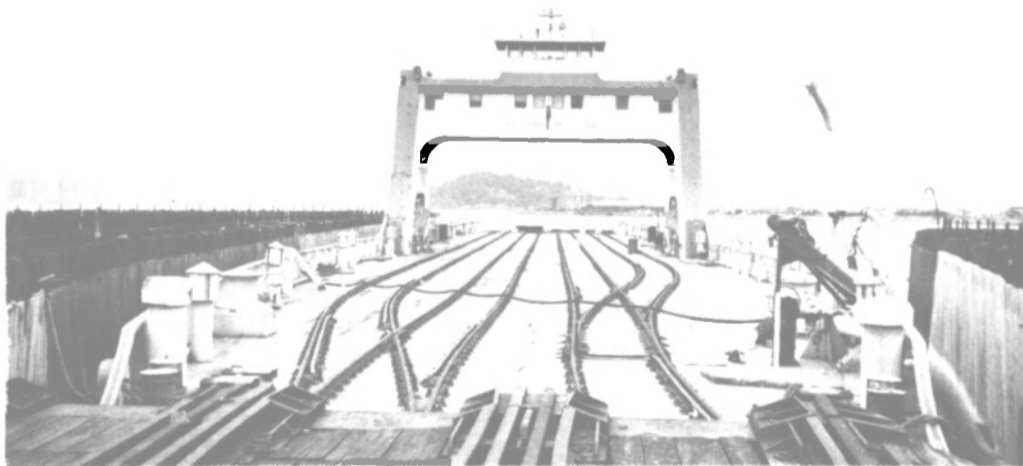
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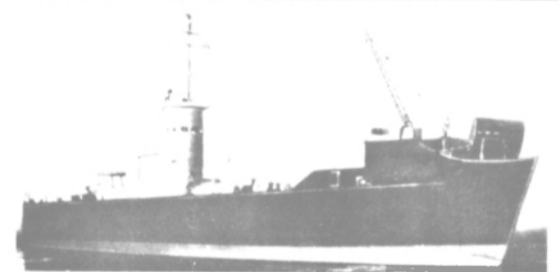
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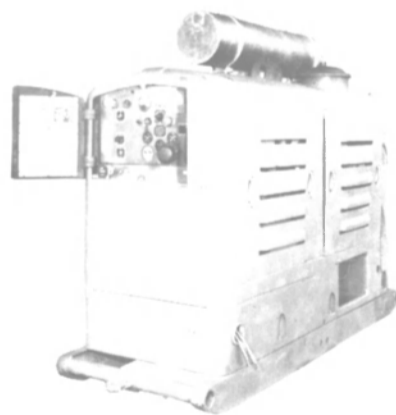
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30 KW GM 3-71 DIESEL GENERATOR SETS

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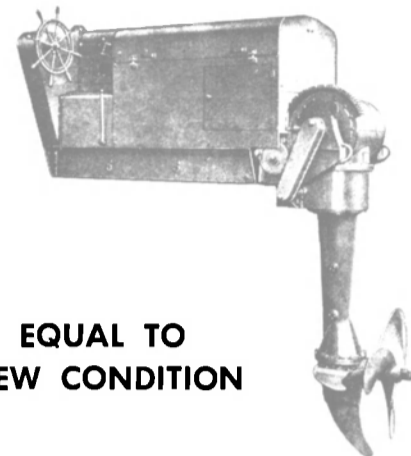
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30KW Delco generator—80% P.F. GMC 3-71 diesel has 24 volt electric starter, with oil, amps & temp gauges, alternator and muffler. Generator equipped with main circuit breaker, voltage regulator, voltmeter, ammeter, frequency meter. 220/440/3/60—1200 RPM. Dry weight 4950 lbs. 100" long x 34" wide x 78" high.

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Four Directors Elected At Levingston Industries

Edward E. Paden, president of Levingston Industries, Inc., announced the election recently of **Jesse M. Calhoon**, **Jim I. Graves**, **Ned J. Marandino**, and Rear Adm. **Charles N. Payne**, USN (ret.) to the board of directors of Levingston Industries, Inc., a Texas-based corporation.

Major operating units and subsidiaries of the corporation are: Levingston Shipbuilding Company of Orange, Texas; Texas Gulfport Shipbuilding Company, located in Port Arthur, Texas; Levingston-Armadillo of Tyler, Texas; Levingston Industrial Products, located in Woodville, Texas; and Levingston Marine, an engineering company located in Annapolis, Md.

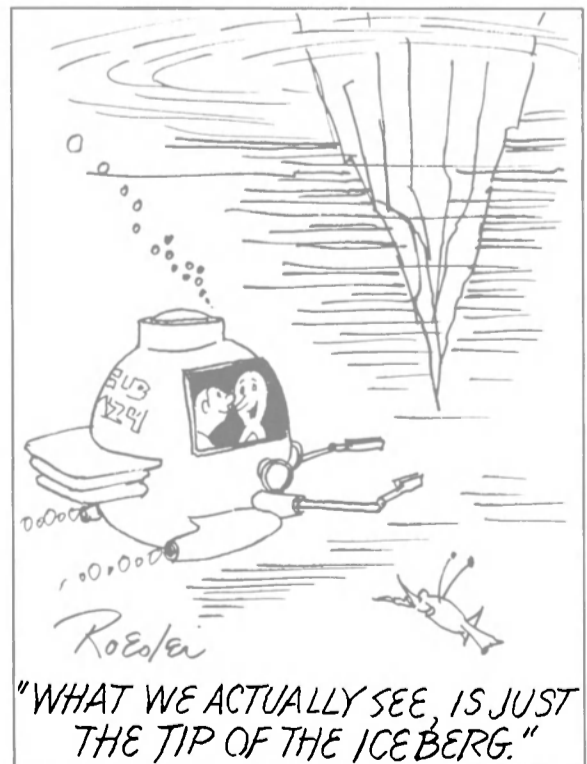


Jesse M. Calhoon

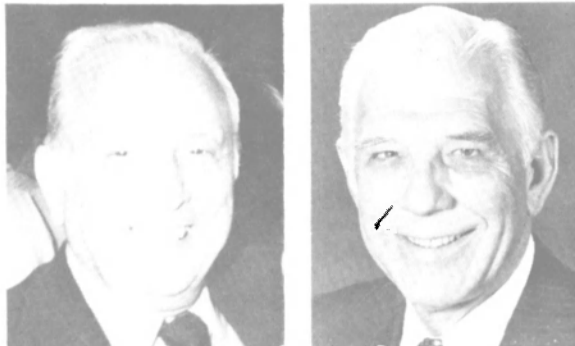
Jim I. Graves

Mr. Calhoon, president of the Marine Engineers' Beneficial Association (AFL/CIO) since 1963, also serves as president of District No. 1-Pacific Coast, and chairman of the board of trustees for the MEBA Pension Fund. Mr. Calhoon joined MEBA in 1944 when he received his third engineer's license. After 11 years as a seagoing engineer, he was elected business manager for MEBA's Norfolk Local in 1955 and national secretary-treasurer in 1958, which post he held until his election as president.

Mr. Graves is a practicing attorney in Orange, recently merging his firm of Graves and Smith with Mehaffy, Weber, Keith and Gonsoulin. He graduated from Southern Methodist University Law School in 1961 with a J.D. degree, and moved to Orange to begin practicing law. He is active in civic af-



fairs, serving as a leader in many areas of importance.



Ned J. Marandino

RArm. Charles N. Payne

Mr. Marandino was president of Ingalls Shipbuilding and a senior vice president of Litton Industries from 1969 until his retirement in 1976. Since then he has worked as a consultant for several companies in the shipbuilding and defense industries. Prior to joining Ingalls he was vice president of operations at Litton's Guidance and Control Division from 1964 to 1969, and had previously spent 10 years with Lockheed's Missiles and Space Division, in a number of managerial positions.

Admiral Payne was president of the Webb Institute of Naval Architecture from 1974 to his retirement last year. He retired from active duty, U.S. Navy, in 1974 as supervisor of shipbuilding at Pascagoula, Miss. In his previous assignments in the Navy he was Commander of the Charleston Naval Shipyard; Comptroller, Bureau of Ships, and Ship Maintenance Officer, U.S. Atlantic Fleet, following seven years of shipboard duty and 12 years of ship design and construction experience.

NABRICO Delivers New Two-Barge Tow To Alabama River Barge



A specially shaped bow enhances the lead barge of a two-barge tow recently delivered to Alabama River Barge Co. by Nashville Bridge Company. The bow is designed to provide greater speed and fuel efficiency in operation of the 297-ft. single-skin petroleum barge.

Nashville (Tenn.) Bridge Company (NABRICO) has delivered an integrated two-barge single-skin petroleum tow to Alabama River Barge Co., Mobile, Ala.

Each barge, one a lead barge and the other a trail barge, is 297 feet by 54 feet by 12 feet. Total Capacity of the two-barge tow is approximately 62,966 barrels, or 2,644,572 gallons of product.

The two barges are outfitted with the NABRICO specially designed 7,500-gallon slop tank, hose cranes and winches. These items have been added to enhance the total operating efficiency of the tow.

In order to provide greater speed and fuel

efficiency, the lead barge has a specially shaped bow.

Both barges have been classed by the American Bureau of Shipping and assigned a limited loadline between Carrabelle and St. Marks, Fla., and between Chicago, Ill., and Burns Harbor, Ind. The U.S. Coast Guard has certificated the tow for carriage of Grade "A" and lower petroleum products.

Raytheon Ocean Systems Offers Literature On New Mobile Mapper & Data Logger

Literature is available from Raytheon Ocean Systems Company, East Providence, R.I., on the firm's Mobile Mapper and Data Logger. The system includes an on-board blotter, an electric positioning system, and a Hewlett Packard 88255 processor.

Some features of the new system include correlation and magnetic recording of selected data; real time position plot; ease of on-board modification of software by the operator; interface with shore-based computers; pre-plot; and post-plot on board.

Other Raytheon systems that may be selected for integration with the Mobile Mapper and Data Logger are FADS, DE-719CSS, DSF-600, and PDSS-200.

For more information and free literature on Raytheon Ocean Systems Mobile Mapper and Data Logger,

Write 12 on Reader Service Card

New Officers Elected At NCAA National Conference



At the recent NCAA National Conference in Charleston, S.C., outgoing NCAA president **Jack Day** (left), administers oath of office to new president **Henry Romero** (center), and new vice president **Joe Zurzolo** (right).

The Naval Civilian Administration Association's (NCAA) 35th National Conference was recently conducted in Charleston, S.C. The NCAA is a national organization of senior-level managers employed in Navy Civil Service. It has chapters at 13 Naval establishments, including seven shipyards, three major aviation facilities, a weapons station, and a division of the Naval Facilities Engineering Command. The Conference was hosted by the Charleston Naval Shipyard Chapter.

Agenda items studied included opposition to administrative impediments to processing travel claims, and opposition to a Social Security/Civil Service Retirement merger; concern over administration of the Merit Pay System and over contracting-out trends; and support of a 600-ship Navy and of productivity enhancement efforts. Speakers included **Jim Colvard**, Deputy Chief of the Naval Material Command, and Dr. **Jim Tweedale**, Director of Productivity in the Department of Navy Secretariat.

New officers elected at the Conference were **Henry Romero** as national president; **Joseph Zurzolo** as national vice president; **Ellyn Robinson** as national secretary; and **Bill Cox** as national treasurer.

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York Division (Borg-Warner Corp.), P.O. Box 1592, York, PA 17405

ANODES—Cathodic Protection

Engelhard Industries Division, 2655 U.S. Route 22, Union, NJ 07083
Kaiser Aluminum & Chemical Corp., 300 Lakeside Dr., (Rm 2039KB), Oakland, CA 94643
Wilson Walton International Inc., 66 Hudson Street, Hoboken, NJ 07030

BEARINGS—Rubber, Metallic, Non-Metallic

Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44052
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

BLASTING—Cleaning—Equipment

Aurand, 1270 Ellis Street, Cincinnati, OH 45223
Butterworth Systems Inc., 224 Park Ave., Florham Park, NJ 07932
Goff-Corporation, One Pleasant Grove Rd., Seminole, OK 74868

BOILERS—Tube Cleaning

Clayton Manufacturing Company, 486 No. Temple City Blvd., El Monte, CA 91731
Combustion Engineering, Inc., Windsor, Connecticut 06095
A.B. Murray Company, Inc., P.O. Box 476, Elizabeth, NJ 07207

BROKERS

Aldenships, 2182 S.E. 17th Street, Fort Lauderdale, FL 33316
B.R.I. Coverage Corporation, 156 Williams Street, New York, NY 10038
Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, La. 70153
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006

BUNKERING SERVICE

Belcher Company, Inc., 8700 West Flagler, P.O. Box 525500, Miami, FL 33152
Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y., N.Y. 10019

CARGO TRANSFER & ACCESS EQUIPMENT

MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016

CHAINS

Neptunia, Via Giovanni da Verrazzano, 12 16 165 Genova, Italy

CHOCKING SYSTEMS

Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
Philadelphia Resins Corp., 20 Commerce Drive, Montgomeryville, Pa. 18936

CONTAINERS—Cargo Container Handling

Paceco Inc. (A division of Fruehauf), West Seaway Access Road, Gulfport, MS 39501

CONTROL SYSTEMS—Monitoring

Arnessen Marine Systems, Inc., One Battery Plaza, New York, NY 10004
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Megastystems, Inc., 1075 N.W. 58th Street, Boca Raton, FL 33431
National Marine Service, Inc., 1750 Brentwood Blvd., St. Louis, MO 63144
Pan American Systems Corporation, P.O. Drawer 400, Belle Chasse, LA 70037
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06052

COUPLINGS

Bird-Johnson Co., 110 Norfolk St., Walpole, MA 02081

CRANES—HOISTS—DERRICKS—WHIRLEYS

Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
M. P. Howlett, Inc., 410 32nd St., Union City, N.J. 07037
National Supply Company, 1455 West Loop South, Houston, TX 77027
J. D. Neuhaus, Witten-Heven, Hebezeuge, D 5810 Witten-Heven, West Germany
Paceco Inc. (A division of Fruehauf), West Seaway Access Road, Gulfport, MS 39501

DECK MACHINERY—Cargo Handling Equipment

Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
Navire Cargo Gear (SEA) Pte. Ltd., 9th Floor Orchard Towers, Orchard Road, Singapore 0923

DIESEL ACCESSORIES—CYLINDER LINERS

B & W Marine Service, One State Street Plaza, New York, N.Y. 10004
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, Massachusetts 02360
Galten Marine Company, Inc., 162 Van Brunt Street, Brooklyn, NY 11231
Twin Disc, Incorporated, Racine, Wis. 53403

ELECTRICAL EQUIPMENT

Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013
Federal Pacific Electric Company, P.O. Box 1800, Somerville, NJ 08876
Marine Safe Electronics of Canada Ltd., 101 Jardin Dr., Suite 24, Concord, Ontario, Canada L4K 1B6
Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014
Port Electric Supply, 157 Perry Street, N.Y., N.Y. 10014
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

EMULSIFICATION SYSTEMS

Hoffert Manufacturing Company, Inc., 1700 East Church Street, Jacksonville, FL 32202

EQUIPMENT—Marine

ATCO Marine Corp., 603 Dean Street, Brooklyn, NY 11238
Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013
Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014
Conhagen/USMP Company, Inc., 4475 South Clinton Ave., South Plainfield, NJ 07080
Consafe Inc., P.O. Box 40339, Houston, TX 77040
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, N.Y. 10550
J. H. Menge & Company, Inc., P. O. Box 23602, New Orleans, La.
John P. Nissen, Jr. Company, Glenside, PA 19038
Rockwell International, Power Tool Division, 400 N. Lexington Ave., Pittsburgh, PA 15208
Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco, CA 94080
Schweper Beschlag GmbH, Postfach 101110, 5620 Velbert 1, West Germany
Stal Laval Inc., 525 Executive Blvd., Elmsford, NY 10523
Sudaimport, 5 Kalyaevskaya, Moscow K-6, USSR
Unitor Ships Service A/S, Mastemyr, 1410 Kolbotn, Norway
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186
Xorbox, Division of Greene & Kellogg, Inc., 290 Creekside Dr., Tonawanda, NY 14150

EVAPORATORS

Aqua-Chem Inc., P.O. Box 421, Milwaukee, WI 53201
Riley-Beard, Inc., P.O. Box 1115, Shreveport, La. 71130

EXPANDED METALS—METALS

Fibergrate Corporation, P.O. Box 344610, Dallas, TX 75234
Lukens Steel Company, Coatesville, PA 19320
Millard Controlled Metals, 5 Louise Drive, Ivyland, PA 18974

FANS—VENTILATORS—BLOWERS—HEATEXCHANGERS

Hartzell Propeller Fan Company, 901 S. Downing Street, Piqua, OH 45356
Joy Manufacturing Co., 338 So. Broadway, New Philadelphia, Ohio 44663
Zidell Explorations, 3121 S.W. Moody St., Portland, Ore. 97201

FENDERING SYSTEMS—Dock & Vessel

Hughes Bros., Inc., 17 Battery Place, New York, N.Y. 10004
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062
Seaward International, Inc., 6269 Leesburg Ave., Falls Church, Va. 22044

FINANCING—Leasing

Continental Illinois National Bank, 231 S. LaSalle, Chicago, IL 60693
Kidder, Peabody & Co., Inc., 10 Hanover Square, New York, N.Y. 10005
Warburg Paribas Becker, Inc., 2 First National Plaza, Chicago, Ill. 60670

FUEL OIL ADDITIVES—Analysis & Combustion Testing

Ralfite Products Inc., 300 Broad Street, Stamford, CT 06901

FURNITURE

Bailey Joiner Co., Inc., 74 Sullivan Street, Brooklyn, N.Y. 11231
Comfort-Mate, Inc., 7988 NW 56th Street, Miami, FL 33166

GALLEY EQUIPMENT

Kiefer Corporation, 2202 W. Clybourn, Milwaukee, WI 53233

GANGWAYS

Rampmaster Inc., 1226 N.W. 23rd Ave., Fort Lauderdale, Fla. 33311

HATCH & DECK COVERS—Chain Pipe

Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
Lockstad Company, Inc., R D 2 Burnett Road, Mendham, NJ 07945
MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Julius Mock & Sons, Inc., 20 Vesey St., New York, NY 10017

HULL CLEANING

Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
Phosmarin Equipment, 21, Boulevard de Paris, 13002 Marseille, France
Seaward Marine Services, Inc., 6269 Leesburg Pike, Falls Church, VA 22044
Sub Enterprises, Inc., P.O. Box 16531, Irvine, CA 92713

HYDRAULICS

Fluid Technology, Inc., 10626 Phillips Highway, Jacksonville, FL 32224
Hydranautics, 6338 Lindmar Drive, Goleta, CA 93017
Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229

INERT GAS—Generators—Systems

ATCO Marine Corporation, 603 Dean St., Brooklyn, NY 11238
Comar Corporation, P.O. Box 460, Worcester, MA 01613
Foster Wheeler Boiler Corp., 110 So. Orange Ave., Livingston, N.J. 07039
Fredrikstad mek. Verkstedt, N. American Agents, American United Marine Corp., 575 Madison Ave., New York, N.Y. 10022
Peabody Holmes Ltd., 17-27 Garratt Lane, London SW 18 4BY

INSULATION—Cloth, Fiberglass

Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231

INSURANCE

Adams & Porter, 1819 St. James Place, Houston, Texas 77027
Adams & Porter, 1 World Trade Center, Suite 8433, New York, N.Y. 10048
Alexander & Alexander, Inc., 1185 Ave. of the Americas, New York, N.Y. 10036
B.R.I. Coverage Corporation, 156 Williams St., New York, NY 10038
Midland Insurance Co., 160 Water St., New York, N.Y. 10038

JOINER—Watertight Doors—Paneling

Masonite Commercial Division, Dover, OH 44622
Walz & Krenzer, Inc., 400 Tralold Road, Rochester, NY 14624

KEEL COOLERS

R.W. Fernstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062

LIFEBOATS & DAVITS

Peabody Holmes Ltd., 17-27 Garratt Lane, London SW 18 4BY
Schat Davit Corporation, 226 West Park Place, Newark, DE 19711

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights

Browning Marine, Inc., (Aqua Signal), P.O. Box 806G, St. Charles, IL 60174
The Guest Corporation, 17 Culbro Drive, West Hartford, CT 06110
Oceanic Electrical Mfg. Co., 157 Perry Street, New York, N.Y. 10014
Oreck Corp., 100 Plantation Rd., New Orleans, LA 70123
Perko Inc., P.O. Box 6400D, Miami, Florida 33164
Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014

MACHINE TOOLS

Republic-Lagun Machine Tool Co., 1000 E. Carson St., Carson, CA 90749

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING

General Electric Company—Bldg. 2, Rm 216, Schenectady, N.Y. 12345
Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco, CA 94080

MOORING SYSTEMS

Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS

Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Highway (Suite 1300), Arlington, VA 22202
Agemar, Ave. 17 No. 108-129, P.O. Box 1465, Maracaibo, Venezuela
All Points Associates, Inc., RD #1, Box 3309, Monroeville, OH 44847
American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004
Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015
J.L. Bludworth, P.O. Box 2441, Corpus Christi, TX 78403
Jacksonville, Florida 32211
Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd., CTS & Associates, 11320 S.W. 108 Court, Miami, Fla. 33176
CADCOM, 107 Ridgely Ave., Annapolis, MD 21401
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
John P. Colletti & Associates, P.O. Box 13378, Pittsburgh, PA 15243
Columbia-Sentinel Engineers Western, Inc., P.O. Box 21542, Seattle, WA 98111

Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass. 02026

Crane Consultants Inc., 15301 1st Ave., So. Seattle, Washington 98148

C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048

Norman N. DeJong & Associates, Inc., 1734 Emerson St., Jacksonville, Fla. 32207

Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129

Designers & Planners, Inc., 2341 Jefferson Davis Hwy., Suite 1100, Century Bldg., Arlington, VA 22202

Donhaiser Marine, Inc., 11511 Katy Freeway, Houston, TX 77079

Francis C. Ducote, P.E., P.O. Box 644, Kenner, LA 70063

Parker C. Emerson & Associates, 17935 Cardinal Drive, Lake Oswego, Oregon 97034

Christopher J. Foster, Inc., 16 Sinsink Drive East, Port Washington, N.Y. 11050

Friede and Goldman, Ltd., 225 Baronne St., New Orleans, La. 70112

Giannotti & Associates, Inc., 703 Giddings Ave., Suite U-3, Annapolis, MD 21401

Gibbs & Cox, Inc., 40 Rector Street, New York, N.Y. 10006

John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110

The Glisten Associates, Inc., 610 Colman Bldg., 811 First Ave., Seattle, WA 98104

Phillip Gresser Associates, Ltd., 3250 South Ocean Blvd., Palm Beach, FL 33480

Morris Guralnick Associates, Inc., 620 Folsom Street, Suite 300, San Francisco, CA 94107

Hampton Roads Engineering, Inc., 119 E. Little Creek Rd., Norfolk, VA 23505

J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048

Hoffman Maritime Consultants Inc., 9 Glen Head Road, Glen Head, NY 11545

Hydranautics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810

Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227

James S. Krogen & Co., Inc., 3333 Rice St., Miami, Fla. 33133

Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460

Lucander Designs, P.O. Box 711, San Perlita, TX 78590

Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063

John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048

Maclear & Harris, Inc., 28 West 44 Street, New York, N.Y. 10036

Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114

Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, N.Y. 11746

Marine Technical Associates, Inc., 195 Paterson Avenue, Little Falls, NJ 07424

Maritime Service Company, 1357 Rosecrans St., Suite B, San Diego, CA 92106

Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225

Mechanical Resources Inc., 191 Cambridge Avenue, Jersey City, N.J. 07307

George E. Meese, 194 Acton Rd., Annapolis, Md. 21403

Metritape, Inc., 33 Bradford Street, Concord, MA 01742

NKF Engineering Assoc., Inc., 8150 Leesburg Pike, Vienna, VA 22202

Nelson & Associates, Inc., 1405 N.W. 167th Street, Miami, FL 33169

Nickum & Spaulding Associates, Inc., 911 Western Ave., Seattle, WA 98104

Captain Conrad P. Nilsen, 66 Beverly Road, Bloomfield, NJ 07003

Norgaard and Clark, 114 Sansome St., San Francisco, CA 94104

Ocean-Oil International Engineering Corporation, 3019 Mercedes Blvd., New Orleans, La. 70114

Offshore Power Systems, 8000 Arlington Expressway, Jacksonville, FL 32211

Oromar International Enterprises, Inc., P.O. Box 13069, Port Everglades, FL 33316

PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117

Pacific Industries Inc., 1440 Canal Street, Suite 1915, New Orleans, LA 70112

Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156

S.L. Petchul, Inc., 1380 SW 57th Ave., Fort Lauderdale, Fla. 33317

Pilotage Consultants, Inc., P.O. Box 3, Atlantic Highlands, NJ 07716

M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013

and 657 Mission St., San Francisco, Calif.

Sargent & Herkes, Inc., 611 Gravier St., New Orleans, La. 70130

Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316

Seacor Systems Engineering Associates, Corp., P.O. Box 2030, 19 Cherry Hill Industrial Park, Perina Blvd., Cherry Hill, NJ 08003

Seaworthy Engine Systems, 36 Main Street, Essex, CT 06426

George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007

T. W. Spaetgens, 156 West 8th Ave., Vancouver, Canada V5Y 1N2

R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235

Richard R. Taubler Inc., 8 Columbia St., Milford, Del. 19963

Thames Engineering Consultants Inc., P.O. Box 589, New London, Ct. 06320

Timso, 622 Azalea Road, Mobile, AL 36609

Townsend Marine Consultants, 18 Church Street, Georgetown, CT 06829

Wadam Wartsila Helsinki Shipyard, P.O. Box 132, SF-00151 Helsinki 15, Finland

Wesley D. Wheeler Assoc., Ltd., 104 E. 40th St., Suite 206, New York, NY 10016

Thomas B. Wilson, 920 North Avalon Blvd., Wilmington, CA 90744

Wind Ship Development Corporation, 690 Main Street, Norwell, MA 02061

Wink Incorporated, 8020 Mayo Blvd., New Orleans, LA 70126

XPLO Corporation, 229 Fifth Street, Gretna, LA 70053

NAVIGATION & COMMUNICATIONS EQUIPMENT

AAT Communications Corporation, 1854 Hylan Blvd., New York, NY 10305

American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526

Apelco Marine Electronics, Division of Raytheon, 676 Island Pond Rd., Manchester, NH 03103

Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024

DEBEG Marine, Inc., 10 Manor Parkway, Salem, NH 03079

Electro-Nav Inc., 840 Bond Street, Elizabeth, NJ 07201

Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080

Griffith Marine Navigation, Inc., 134 North Avenue, New Rochelle, NY 10801

Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913

Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631

ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611

Intermarine Electronics, Inc., Flowerfield Bldg., #7, St. James, N.Y. 11780

Iotron Corp., 5 Alfred Circle, Bedford, MA 01730

Kongsberg North America Inc., 135 Fort Lee Road, Leonia, NJ 07605

Kongsberg Vapenfabrikk, Narcontrol Division, P.O. Box 145, Horten 3191, Norway

Krupp Atlas-Elektronik, 241 Erie Street, Jersey City, NJ 07302

Magnavox Navigation Systems, 2829 Maricopa Street, Torrance, CA 90503

- Maritel, Inc., 139 Old Solomon's Island Road, Annapolis, MD 21401
Nav-Com, Inc., 711 Grand Blvd., Deer Park, NY 11729
Navidyne Corp., 11824 Fishing Point Drive, Newport News, VA 23606
Navigation Communications Systems, Inc., 20100 Plummer Street, Chatsworth, CA 91311
North American Philips Communication Corp., 55 Knights Bridge Road, Piscataway, NJ 08854
RCA Service Co., Building 204-2, Camden, N.J. 08101
Racal-Decca Marine, Inc., P.O. Box G, #1 Commerce Blvd., Palm Coast, FL 32037
Radar Devices, Inc., 2955 Merced Street, San Leandro, CA 94577
Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061
Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504
Southern Marine Research, Inc., 1401 N.W. 89th Court, Miami, FL 33172
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Tracor, Inc., Industrial Products Div., 6500 Tracor Lane, Austin, Texas 78721
- OILS—Marine—Additives**
B. P. Marine North America Trading, Plaza 9, 900 Route 9, Woodbridge, NJ 07095
Ferrous Corporation, P.O. Box 1764, Bellevue, WA 98009
Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Mobil Oil Corporation, 150 East 42nd St., New York, N.Y. 10017
Texaco, Inc. (International Marine), 135 East 42nd St., N.Y., N.Y. 10017
- OIL WATER SEPARATORS**
Alfa-Laval, Inc., 2115 Linwood Avenue, Ft. Lee, NJ 07024
Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
National Marine Service, Inc., 1750 Brentwood Blvd., St. Louis, MO 63144
- PAINTS—COATINGS—CORROSION CONTROL**
American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
Aron, 4700 Ramona Blvd., Monterey Park, CA 91754
"CONSOL" manufactured by Hanline Bros., Inc., 1400 Warner St., Baltimore, MD 21230
Devac Marine Coatings Co., P.O. Box 7600 Louisville, KY 40207
Eureka Chemical Company, 234 Lawrence Ave., So. San Francisco, CA 94080
Henkel Corporation, 4620 West 77th Street, Minneapolis, MN 55435
International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004
Jatun-Baltimore Copper Paint Co., 840 Key Highway, Baltimore, MD 21230
Mabay Chemical Corporation, Plastics & Coatings Div., Pittsburgh, PA 15205
Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 08817
Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
Selby, Battersby & Company, 5220 Whiby Avenue, Philadelphia, PA 19143
- PETROLEUM SUPPLIES**
Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
- PIPE—HOSE—Cargo Transfer, Clamps, Couplings, Coatings**
Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I. N.Y. 11696
CUNICO Corp., Cooney Pipe & Copper Works Div., 214 N. Hawaiian Ave., Wilmington, CA 90748
Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073
Kubota Ltd., 2-47, Shikit Suhiaashi 1-Chome, Naniwa-Ku, Osaka 556-91, Japan
Penco Division Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Sanchem, Inc., 1600 South Canal Street, Chicago, IL 60616
Tioqa Pipe & Supply Company, 2450 Wheatshaf Lane, Philadelphia, PA 19137
- PLASTICS—Marine Applications**
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
- PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines**
Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021
Armo Steel Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
Centrico, Inc., 100 Fairway Court, Northvale, NJ 07647
Colt Industries' Fairbanks Morse Engine Division, Beloit, Wis. 53511
Combustion Engineering, Inc., Windsor, Connecticut 06095
General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531
Kawasaki Heavy Industries, Ltd., 2-4-1 Hamamtsu-cho, Minato-ku, Tokyo, Japan
MTU of North America, Inc., 10450 Corporate Drive, Sugar Land, TX 77478
Maritime Industries, Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3
Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
Omnithruster Inc., 15418 Carnet Ave., Santa Fe Springs, CA 90670
Oosterhuis Industries, Inc. (Marine Engineering, Inc.), P.O. Box 30587, New Orleans, LA 70190
P.J. Plishner Marine, 2 Lake Avenue Ext., Danbury, CT 06810
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
Propulsion Systems Inc., 21213 76th Ave., So., Kent, WA 98031
Schottel of America, Inc., 8725 N.W. 54 Street, Miami, Fla. 33166
Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
Steamco Corporation, 1020 East 8th Street, Jacksonville, FL 32206
Tacoma Boat Co. Escher Wyss, 1840 Marine View Dr., Tacoma, WA 98422
Transamerica DeLaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
Transamerica DeLaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650
Turbine Specialties, Inc., P. O. Box 207, West State Street Road, Salina, KS 67401
Voith Schneider of America—U.S. Agent: Eli Sharprut, 347 Evelyn St., Paramis, N.J. 07652
- PUMPS—Repairs—Drives**
Barco Corporation, 16 Bahama Circle, Tampa, FL 36606
Penco Division Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Transamerica DeLaval, IMO Pump Division, P.O. Box 447, Monroe, NC 28110
- REFRIGERATION—Refrigerant Valves**
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Port Refrigeration Div., 157 Perry Street, New York, N.Y. 10014
- ROPE—Manila—Nylon—Hawsers—Fibers**
American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
Atlantic Cordage Corp., 60 Grant Avenue, Carteret, NJ 07003
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
- RUDDER ANGLE INDICATORS**
Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Modular Systems, 164 Franklin Avenue, Rockaway, NJ 07866
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
- SAFETY EQUIPMENT**
ACR Electronics, Inc., 3901 North 29th Avenue, Hollywood, FL 33020
Datrex, 3770 N.W. So. River Drive, Miami, FL 33142
- SANITATION DEVICES—Pollution Control**
American United Marine Corp., 575 Madison Avenue, New York, NY 10022
Argo Marine Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
Chapman Engineers (Omnipure Division), 6101 Southwest Freeway, Suite 100, Houston, TX 77057
Envirovac (Division of Domestic Inc.), 1260 Turret Drive, Rockford IL 61111
Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
Marland Environmental Systems, Inc., N. Main Street, Walworth, WI 53184
Microphar, Inc., P.O. Box 490, Willits, CA 95490
Red Fox Industries, P.O. Drawer 640, New Iberia, LA 70560
St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111
Somat Corporation, Pomeroy, PA 19367
- SCAFFOLDING EQUIPMENT—Work Platforms**
Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024
- SHACKLES**
West Footscray Engineering Works P.L., 52 Cross Street, West Footscray, Melbourne, Victoria, 30 12, Australia
- SHAFT SEALS, REVOLUTION INDICATOR EQUIPMENT**
Bird-Johnson Co., 100 Norfolk St., Walpole, MA 02081
Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Penco Division Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
- SHIPBREAKING—Salvage**
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201
- SHIPBUILDING STEEL**
Armo Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
- SHIPBUILDING—Repairs, Maintenance, Drydocking**
A.D.M. (Amsterdam Drydock Mfg.), Maatschappij bv, P.O. Box 3006, 1003 AA, Amsterdam, Holland
AMT, Inc., 2400 N.W. 39th Avenue, Miami, FL 33142
Asmar Shipyards Co., Astilleros y Maestranzas de la Armada, Prat 856, Piso 14, Casilla 150-V, Valparaiso, Chile, S.A.
Astilleros Espanoles S.A., 17 Padilla, P.O. Box 815, Madrid, Spain
Astilleros Unidos de Veracruz, S.A., San Juan de Ulua S N, Apdo. Postal 647, Veracruz, Var., Mexico
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bay Shipbuilding Corporation, 605 North Third Avenue, Sturgeon Bay, WI 54235
Bender Shipbuilding & Repair, P.O. Box 42, Mobile, AL 36601
Bergeron Industries Inc., P.O. Box 38, St. Bernard, LA 70085
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
Blahm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
Blowworth Bond Shipyards Inc., P.O. Box 5065, Houston, TX 77012
Boeing Marine Systems, P.O. Box 3707, Mail Stop 14-11, Seattle, WA 98124
Canteri Navali Riuniti, Via Cipro, 11, 16100 Genova, Italy
Carrington Slipways Pty, Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322
Centromar, One World Trade Center, Suite 3557, New York, N.Y. 10048
China Shipbuilding Corp., c/o Allegro Transportation Supply Co., One Penn Plaza, Room 1606, New York, NY 10119
Conrad Industries, P.O. Box 790, Morgan City, La. 70309
Curacao Drydock Company Inc., 26 Broadway, Suite 741, New York, NY 10004
Dorbyl Ltd., Military Road, 1 Industrial Sites, West Bank, 5201 East London Republic of South Africa
Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602
FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, Oregon 97208
Galveston Shipbuilding Co., P.O. Drawer 2660, Galveston TX 77553
HBC Barae, Inc., Grant Building, Pittsburgh, PA 15219
Halifax Industries Ltd., P.O. Box 1477, Halifax, Nova Scotia, Canada, B3K 5H7
Halter Marine, Inc., P.O. Box 29266, New Orleans, La. 70189
Havre de Grace, Havre de Grace, Md.
Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edobori 1-Chome, Nishi-Ku, Osaka, Japan
Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hong Kong
Hudson Shipbuilders, Inc., P.O. Box Q, Pascagoula, MS 39567
Jeffboat, Inc., Jeffersonville, Ind. 47130
Levingston Shipbuilding, P.O. Box 968, Orange, TX 77630
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
McDermott Incorporated, 1010 Common Street, New Orleans, LA 70160
MacGregor Land & Sea, Inc., 135 Dermody Street, Cranford, NJ 07016
Marine Fabricators, P.O. Box 246, Green Cove Springs, FL 32043
Milton Shipyard Co., Inc., P.O. Box 645, Cohoes, New York 12047
Midland Marine Corporation, One Pennsylvania Plaza, New York, NY 10001
Misener Industries, Inc., 5353 Tyson Avenue, P.O. Box 13625, Tampa, Fla. 33681
Monark Boat Co., P.O. Box 210, Manticello, Ark. 71655
Nashville Bridge Company, P.O. Box 239, Nashville, TN 37202
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newpark Shipbuilding & Repair, P.O. Box 5426, Houston, TX 77012
Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607
O.A.R.N. (Officine Allestimento-Riprazioni Navil), P.O. Box 1395, Genoa, Italy 16100
Paceca Inc. (A division of Fruehauf), West Seaway Access Road, Gulfport, MS 39501
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
Progressive Shipbuilders & Fabricators, Inc., P.O. Box 9130, Houma, LA 70361
- Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
Savannah Shipyard Co., P.O. Box 787, Savannah, GA 31402
Southwest Marine, Inc., P.O. Box 13308, San Diego, Ca 92113
Sudaimport, 5 Kalyaevskaya, Moscow K-6, USSR
Sun Ship Inc., Chester, PA 19013
Swiftships Inc., P.O. Box 1908, Morgan City, LA 70380
Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, WA 98422
Tandonor (Piacentini), Antartida Argentina 555 Darsena Norte, (1104) Buenos Aires-Republica Argentina
Thomas Marine Inc., 37 Bransford Street, Patchogue, NY 11772
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Total Transportation Systems Inc., 813 Forest Dr., Newport News, VA 23606
Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 28, N5201 Oslo, Norway
Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316
Tug Barge Systems, Inc., subsidiary of Ingram Corp., 4100 One Shell Square, New Orleans, La. 70139
Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
- SHIPPING**
Candia Shipping (USA) Inc., One World Trade Center, Suite 1611, New York, NY 10048
- SHIP STABILIZERS**
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
- SMOKE INDICATORS**
Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
- STUFFING BOXES**
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062
- SURVEYORS AND CONSULTANTS**
Francis B. Crocco, Inc., P.O. Box 1411, San Juan, Puerto Rico 00903
Hull & Cargo Surveyors, Inc., 99 John St., New York, NY 10038
- TANK CLEANING**
Butterworth Systems Inc., 224 Park Ave., P.O. Box 352, Florham Park, N.J. 07932
Environmental Chemicals, Inc., 487 Division Street, Boonton, NJ 07005
Penco Division Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Salwico, Inc., 5 Marine View Plaza, Hoboken, NJ 07030
- TANK LEVELING INDICATORS**
Transamerica DeLaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062
Vu-Gage System, 150 E. 42nd St. (Room 910), New York, NY 10017
- TERMINALS—Oil-Transfer**
Caicos Petroleum Services Div., Federal Chicago Corp., 2222 North Elston Avenue, Chicago, IL 60614
- TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.**
Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Chotin Transportation, Inc., 580 Walnut St., Cincinnati, Ohio 45202
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771
Great Lakes Towing Company, 1800 Terminal Tower, Cleveland, OH 44113
Gulf Fleet Marine Corporation, Canal Place One, Suite 2400, New Orleans, LA 70130
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048
Ocean Salvors Company, One World Trade Center, New York, NY 10048
Smit International (Americas) Inc., 17 Battery Place, New York, NY 10004
Suderman & Young Co., Inc., 918 World Trade Bldg., Houston, Texas 77002
Turecama Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Staten Island, N.Y. 10305
- TRAINING SERVICES—Simulator**
Ship Analytics, Park Circle, Centerport, NY 11721
- VALVES AND FITTINGS**
American United Marine, 575 Madison Avenue, New York, NY 10022
Dover Corporation, Norris Division, P.O. Box 1739, Tulsa, OK 74101
Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Marland Environmental Systems Inc., N. Main St., Walworth, WI 53184
Parker-Hannifin Corporation, 17325 Euclid Avenue, Cleveland, OH 44112
Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229
Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186
Winel, Inc., 34655 Mills Road, North Ridgeville, OH 44039
- WATER PURIFIERS**
Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559
- WINCHES AND FAIRLEADERS**
Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134
Smith-Berger Manufacturing Corporation, 3236 16th Avenue S.W., Seattle, WA 98134
- WINDINGS**
Kearfott Marine Products, A Singer Co., 550 South Fulton Avenue, Mt. Vernon, N.Y. 10550
- WIRE AND CABLE**
Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, Illinois 60076
Seacoast Electric Supply Corp., 225 Passaic St., Passaic, NJ 07055
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Armo Steel Corp., 703 Curtis St., Middletown, Ohio 45042
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Smith & McCracken, 153 Franklin St., New York, N.Y. 10013

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CALENDAR OF COMING EVENTS

International Marine Fuel Utilization Conference Sept. 1-4
Sponsored by Marine Energy Institute, Inc.

Baltimore Convention Center, Baltimore, Md. Contact James Cunningham, Marine Energy Institute, 1410 Locust Street, Baltimore, Md. 21204; (301) 825-4238.

8th Annual Research and Engineering for Automation and Productivity in Shipbuilding (REAPS) Symposium Sept. 15-17

Sponsored by various U.S. shipyards and the Maritime Administration, and conducted by IIT Research Institute. Baltimore Hilton Hotel, Baltimore, Md. Contact Marge Hernandez, REAPS Program Librarian, IITRI, 10 West 35th Street, Chicago, Ill. 60616; (312) 567-4623.

Offshore Europe 81 Sept. 15-18
Organized by Spearhead Exhibitions Ltd., Bridge of Don Showground, Aberdeen, Scotland.

Contact Elizabeth Barker, Spearhead Exhibitions Ltd., Rowe House, 55/59 Fife Road, Kingston-upon-Thames, Surrey KT1 1TA England; (01) 549 5831, Telex 928042.

OCEANS 81 Sept. 16-18
Sponsored by the Marine Technology Society and the Council on Ocean Engineering.

Sheraton Hotel, Boston. Contact Jack McCarthy, OCEANS 81, P.O. Box 436, Cohasset, Mass. 02025; (617) 383-0720.

Coal Ports West Sept. 16-18
A seminar sponsored by The American Association of Port Authorities.

Holiday Inn Holiday, Sacramento, Calif. Contact Rexford B. Sherman, director of research and publications, AAPA, 1612 K Street, N.W., Washington, D.C. 20006; (202) 331-1263.

Innovations for the '80s: A Shipbuilding & Repair Symposium Sept. 17-18

Sponsored by Puget Sound Naval Shipyard; Supervisor of Shipbuilding, Seattle; and Puget Sound Chapter of American Society of Naval Engineers.

Edgewater Inn, Seattle, Wash., Contact Russell Carstensen, Chairman, c/o Puget Sound Naval Shipyard, C/270.3, Bremerton, Wash. 98314; (206) 478-4176.

Maritime Alaska '81: A Conference on Maritime Commerce and Port Development Sept. 21-24

Sponsored by U.S. Maritime Administration; U.S. Coast Guard, Seventeenth District; Alaska District, Corps of En-

gineers; Alaska Department of Transportation and Public Facilities.

Anchorage Sheraton Hotel, Anchorage, Ak. Contact Brenda Melteff, Alaska Sea Grant Program, University of Alaska, Fairbanks, Alaska 99701.

International Fishing Exhibition, Mexico 81 Sept. 21-25
Organized by the Industrial and Trade Fairs International Ltd. and Ferias y Exposiciones Mexicanas.

Acapulco Convention Center, Acapulco, Mexico. Contact Ms. Helena Durban, Industrial and Trade Fairs International Ltd., Radcliffe House, Blenheim Court, Solihull, West Midlands B91 2BG United Kingdom; (021) 705 6707, Telex 337073.

The Sixth International Waterborne Transit Conference Sept. 29-Oct. 2
Organized by the International Marine Transit Association (IMTA).

Hotel Scandinavia, Copenhagen, Denmark, Contact Bryan C. Walker, president; or Lotte Oedegaard, press secretary, DDS A/S, Copenhagen K, Denmark, Skt. Annae Plads 30, DK-1295; 01 15 6300.

The Bunker Problem; How to Cope Sept. 30
Sponsored by U.S. Merchant Marine Academy Foundation.

U.S. Merchant Marine Academy, Kings Point, N.Y. Contact Capt. Alfred Fiore,

U.S. Merchant Marine Academy, Kings Point, N.Y. 11024; (212) 765-3304.

SHIPASIA Exhibition and Conference Oct. 13-17

Sponsored by The Hong Kong Shipowners Association, the Hong Kong Joint Branch of the Royal Institution of Naval Architects and the Institute of Marine Engineers, and the Shipping Committee of the Hong Kong General Chamber of Commerce, in cooperation with the ShipAsia management. The conference will be organized by Lloyd's of London Press Ltd.

Ocean Terminal, Hong Kong. Contact Peter K. Johnson, director, ShipAsia '81, 6006 Bellaire Boulevard, Suite 101, Houston, Texas 77081; (713) 666-5188, telex 910 881 5777.

Extreme Loads Response Symposium Oct. 19-20

Presented by the Ship Structure Committee and The Society of Naval Architects and Marine Engineers.

Sheraton National Hotel, Arlington, Va. Contact Comdr. James A. Sanial, registration chairman, ELRS, U.S. Coast Guard Headquarters (G-DMT-1/54), Washington, D.C. 20593.

Gastech 81: 8th International LNG/LPG Conference & Exhibition Oct. 20-23

Organized by Business Meetings Limited. Congress Centrum, Hamburg, Federal

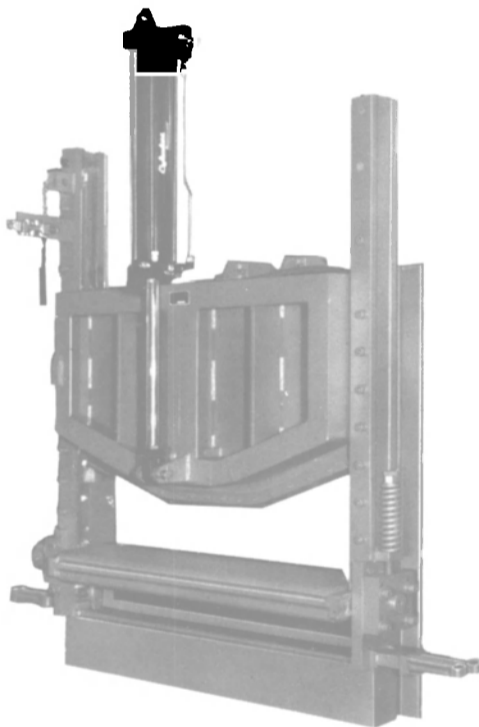
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Republic of Germany. Contact Gastech Secretariat, 2 Station Road, Rickmansworth, Herts WD3 1QP, England; 09237 76363, telex 924312. (Preview in October 1 issue of MR/EN)

Combat Systems Symposium Oct. 21-22
Sponsored by the Chief of Naval Materials; Chief of Naval Research; and the Commanders of the Naval Air, Electronics and Sea Systems Commands in cooperation with ASNE.

Mahan Hall, U.S. Naval Academy, Annapolis, Md. Contact American Society of Naval Engineers, 1012 14th St. N.W., Washington, D.C. 20005; (202) 737-0757.

Fishing Industry Energy Conservation Conference Oct. 26-27

Organized by SNAME Fishing Systems Panel. Sponsored by National Marine Fisheries Service.

Park Hilton Hotel, Seattle, Wash. Contact David F. Smith, Registration Chairman, P.O. Box 297, Seahurst, Wash. 98062.

Europort Exhibition and Congress Nov. 11-14

Sponsored by the Europort Organization, RAI Halls, Amsterdam, the Netherlands.

Contact: Peter K. Johnson, Europort, 6006 Bellaire Blvd., Suite 100, Houston, Texas 77081; (713) 666-5188, telex 910 881 5777.

International Issues Day Nov. 16

Sponsored by The Maritime Association of the Port of New York.

N.Y. City Passenger Ship Terminal, New York City. Contact Gary McIsaac, ISOSO-1981, 34th Floor, 80 Broad St., New York, N.Y. 10004; (212) 425-5704, telex 12 6808 Maritime NYK.

International Symposium on Ship Operations (ISOSO) '81 Nov. 17-19

Sponsored by The Maritime Assoc. of the Port of New York, American Institute of Merchant Shipping, Council of American Flag Ship Operators, The Hydrographic Society and the Council of American Master Mariners.

N.Y. City, Passenger Ship Terminal, New York City. Contact Gary McIsaac, ISOSO-1981, 34th Floor, 80 Broad Street, New York, N.Y. 10004; (212) 425-5704; telex 12 6808 Maritime NYK.

89th Annual Meeting of The Society of Naval Architects and Marine Engineers Nov. 18-21

Sponsored by The Society of Naval Architects and Marine Engineers.

Hilton Hotel, New York, N.Y. Contact Trevor Lewis-Jones, SNAME, One World Trade Center, Suite 1369, New York, N.Y. 10048; (212) 432-0310.

Cove Asks Title XI For \$25-Million Tanker Reconditioning Work

Cove Liberty Corp., a subsidiary of Cove Maritime Companies, Inc., Wall Street Plaza, Suite 1630, New York, N.Y., has applied for a Title XI guarantee to aid in financing the reconstruction of a tanker.

No shipbuilder has been named to recondition the 69,000-dwt tanker, but the work is expected to be completed by the end of this year. Cove operates the tanker in the domestic coastal and intercoastal trades of the United States.

If approved, the guarantee would cover \$21,875,000, or 87½ percent of the \$25,000,000 estimated actual cost of reconditioning the vessel.

Global Marine Drilling Names Baumgardner VP

Paul D. Baumgardner has been appointed a drilling group vice president of Global Marine Drilling Co., Houston, Texas, it was announced recently by Gary L. Kott, president of the Global Marine Inc. subsidiary.

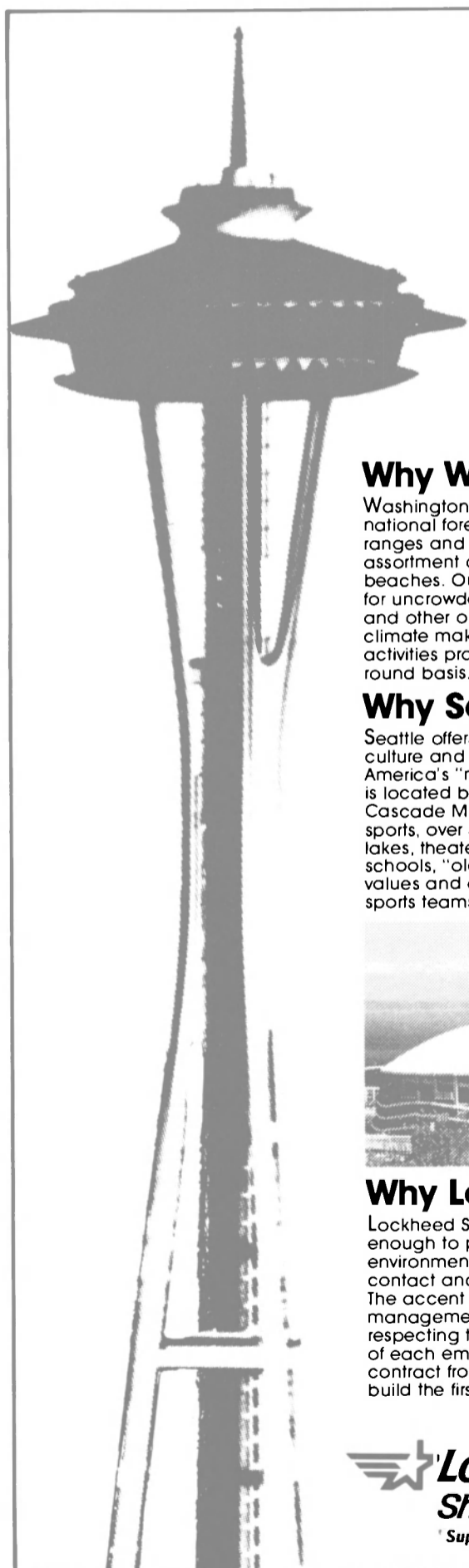
Mr. Baumgardner will report to C.H. (Buddy) King, senior vice

president, operations, with responsibility for a portion of Global Marine's 21-rig offshore drilling fleet.

A graduate of the University of Missouri, he previously held management positions with Dolphin International, an offshore drilling contractor, and before that he served with Santa Fe International and Atlantic & Pacific Marine.

\$8.8 Million To General Ship For Naval Work

General Ship Corporation, East Boston, Mass., is being awarded a \$8,839,573 firm fixed price contract for the regularly scheduled overhaul of the frigate USS Garcia (FF-1040). The Naval Sea Systems Command is the contracting activity. (N62665-79-C-0004)



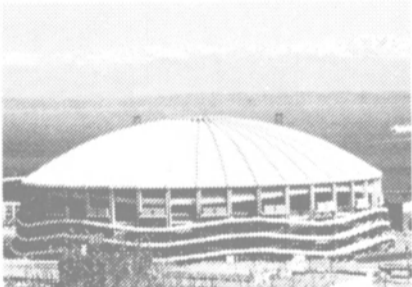
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Because of the difficulty in identifying these devices, have your on-site electrician or facility engineer review the following chart to determine if you have any of these FPE Breakers.

Identification chart of breakers involved in corrective actions

| BREAKER TYPE | AMPERE RANGE | POLES | VOLTS A.C. RATING MAX. | TYPE OF FACILITY | CORRECTIVE ACTION REQUIRED |
|--------------|--------------|-------|------------------------|---------------------------------------|---|
| NEJ/HEJ | 70-225 | 2 & 3 | 240 | Light Industrial | REPLACE BREAKERS |
| NFJ/HFJ | 70-225 | 2 & 3 | 600 | Industrial | REPLACE BREAKERS INSTALLED ON ELECTRICAL SYSTEMS ABOVE 550 VOLTS |
| NEG/HEG | 30-100 | 2 & 3 | 600 | Heavy Industrial | MODIFY BREAKERS INSTALLED ON 480 VOLTS OR ABOVE. MODIFY BREAKERS INSTALLED IN FPE ENCLOSURES 1100T. |
| NEF | 40-100 | 2 & 3 | 480 600 | Commercial and Industrial | REPLACE BREAKERS |
| NP | 600-2500 | 2 & 3 | 600 | Large Electrical Distribution Systems | REPLACE BREAKERS INSTALLED ON ELECTRICAL SYSTEMS WITH AVAILABLE FAULT CURRENTS ABOVE 85,000 AMPERES AT 240 VOLTS OR 50,000 AMPERES AT 480 AND 600 VOLTS OR WHERE ROUTINELY USED AS A SWITCH |

This is part of a program voluntarily initiated by Federal Pacific. The Consumer Product Safety Commission has been notified. Lab tests have indicated that these Circuit Breakers could cause personal injury or property damage. Federal Pacific will respond as soon as possible by phone or mail. Allow 6 weeks for this preliminary contact.

If your electrician finds you have these FPE breakers in service, or if he is uncertain, please call, toll free: 800-526-3962 (In N.J.: call 800-942-7773.)

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Company _____

Address _____

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| <i>Warehouses</i> | NEW ORLEANS, LA. 70117 | 632 Alvar Street | 504/943-2461 |
| Write 78 on Reader | NORTH MIAMI, FLA. 33179 | 524 N.E. 190th St. | 305/651-4160 |
| Service Card | WASHINGTON, D.C./VA. Area | | 703/750-1901 |

Write 125 on Reader Service Card